The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 734.---Vol. XIX.] LONDON, SATURDAY, SEPTEMBER 15, 1849. [Price 6d.

Stannaries of Cornwall—In the Vice-Warden's Court.

PURSUANT to a DECREE of the VICE-WARDEN'S COURT, made in the cause of FRANCIS v. CAVE, the CREDITORS, in respect of PENBERTHY CROFTS MINE, in the parish of SAINT HILARY, within the said Stannaries, are, on or before the 26th day of September inst., to come in and PROVE their DEBTS before the Registrar of the said Court, at his office in Truro; or, in default thereof, they will be peremptorily excluded the benefit of the said Decree.
Dated Registrar's Office, Truro, Sept. 12, 1849. 1

Stannaries of Cornwall—In the Vice-Warden's Court.

PURSUANT to a DECREE of the VICE-WARDEN'S COURT, made in the cause of KEAST v. VERRAN, the CREDITORS, in respect of TREWETHA MINE, in the parish of ENDELLION, within the said Stannaries, are, on or before the 26th day of September inst., to come in and PROVE their DEBTS before the Registrar of the said Court, at his office in Truro; or, in default thereof, they will be peremptorily excluded the benefit of the said Decree.
Dated Registrar's Office, Truro, Sept. 12, 1849. 2

Stannaries of Cornwall—In the Vice-Warden's Court.

PURSUANT to a DECREE of the VICE-WARDEN'S COURT, made in the cause of KITTO v. ROWE, STRONGMAN and OTHERS v. SAME, the CREDITORS, in respect of the CUBERT SILVER-LEAD MINES, in the parish of CUBERT, within the said Stannaries, are, on or before the 26th day of Sept. inst., to come in and PROVE their DEBTS before the Registrar of the said Court, at his office in Truro; or, in default thereof, they will be peremptorily excluded the benefit of the said Decree.
Dated Registrar's Office, Truro, Sept. 12, 1849. 3

DENBIGHSHIRE, FLINTSHIRE, AND THE CITY OF CHESTER.
LARGE AND IMPORTANT SALE OF FREEHOLD AND LEASEHOLD ESTATES, AND OTHER PROPERTY.

MR. R. W. JOHNSON will SELL, BY AUCTION, at the Wynnstay Arms Hotel, in WREXHAM, on Tuesday, the 25th day of September inst., at the hour of Two o'clock in the afternoon, in the following or such other lots as shall be then decided upon, and subject to the conditions to be then produced, 4

THE VERY DESIRABLE
FREEHOLD MESSUAGES,

FARM LANDS, TENEMENTS, and HEREDITAMENTS, containing valuable MINES of COAL, IRONSTONE, LEAD ORE, &c., lately the property of James Kyrke, Esq.—the situation, description, and quantity of which are next hereinafter mentioned:—

DENBIGHSHIRE.
BRYMBO, IN THE PARISH OF WREXHAM.

Lot.	Names. Occupiers.	Acreage. A.	R.	P.
1.	Upper Glascoed and Pew in Minera Church ..... James Kyrke	88	3	5
2.	Middle Glascoed ..... John Turner and others	27	3	20
3.	Lower Glascoed and Pew in Minera Church ..... John Hughes	77	3	34
4.	Pentre Saison, and part of land belonging thereto ..... Robert Williams	97	1	34
5.	Cefn, with remaining part of Pentre Saison ..... Edward Roberts	48	0	10
6.	Fynnon-y-cwrw ..... Thomas Parry	38	0	17
7.	Waen ..... John Jones, T. Parry, & others	76	2	10
8.	The Gorse ..... Thomas Williams	5	2	9
9.	Cefn Rychan ..... William Jones	3	3	7
10.	Part of Coed-y-felin ..... Lately James Kyrke	26	1	29
11.	Cefn-y-Maes ..... David Roberts	9	0	6
12.	One Quarter Share of Commutation Rent Charge, in lieu of tithes of hay and corn, in the township of Brymbo, amounting, according to the apportionment of the commissioners, to £75 per annum, but subject to a fee-farm rent of £6 15s. per annum.			

FLINTSHIRE.
UCHYMYNYDD ISSA, IN THE PARISH OF HOPE.

13.	Tenement near Frith Turnpike Gate ..... Samuel Davies	4	0	28

DENBIGHSHIRE.
BROUGHTON, IN THE PARISH OF WREXHAM.

14.	Bryn Teg ..... Thomas Mannel	14	1	14
	Extremely valuable as a surface and mineral property.			
15.	Nathaniel Jones Tenement ..... Benj. Piercy and others	1	3	32
16.	Moss Quarry Tenement ..... Thomas Hughes and others	2	2	32
17.	Cae Salisbury ..... Samuel Jones	3	0	16
18.	Cae Sheat ..... George Ellis	5	0	13
	This and the preceding lot are full of excellent coal.			
19.	Cottages, Bakehouse, and Croft, near Brymbo Blast Furnaces ..... George Kyrke, Esq.	0	3	32

PARISH OF BUABON.

20.	Four substantial Stone Cottages at Rhos-y-medre, near to the church, with large Gardens ..... Evan Roberts and others.			

PARISH OF LLANFAIRDE-YN-MOCHNANT.

21.	Bryn Glas ..... Robert Roberts	116	0	33
	Subject to a rent-charge of £3 per annum, or thereabouts, to the poor of the parish.			

CITY OF CHESTER.

22.	Large & commodious House and Shop, No. 105, Eastgate-street ..... Mr. Edward Peters, brazier.			

Total acreage 648 0 29

ALSO, THE LEASEHOLD ESTATES

of the said James Kyrke, in the under-mentioned property:—

Lot 23.—MESSUAGES, COTTAGES, TENEMENTS, and LAND, containing in the whole 4 A. 1 R. 22 P., in Bagillt, in the parish of Holywell, Flintshire (part of which, called "The Ropery," is underleased to the parish of Holywell), held for a term of years ending 25th December, 1894, and producing a net rental of £48 per ann., or thereabouts.

Lot 24.—The PENYCOED COLLIERY, in Brymbo aforesaid, extending to the minerals under 90 acres of land, adjoining the Brymbo Branch of the Shrewsbury and Chester Railway—adjacent to which a wharf has been constructed for the use of the colliery.—Also, the absolute interest in the PLANT, consisting of a winding engine, 6-horse power (incomplete).—Also, the USE of a DAY LEVEL, lately driven at great expense for drainage. An inventory and valuation will be produced at the sale, and the purchaser is to take the same at such valuation.

Lot 25.—The PLASMAEN COLLIERY (near the Frood), and the absolute interest in the PLANT, consisting of a large pumping engine, &c.—This colliery is situated in a good turnpike-road, and commands an excellent local sale.—Also,

THE SHARES

of the said James Kyrke, in several COLLIERIES and MINES, as under:—

Lot 26.—TWENTY-THREE (96ths) SHARES in the BRYNMALLY COLLIERY, near Wrexham, and the MINERALS under 173 acres of land, together with the PLANT, consisting of engines (pumping and winding), and other colliery implements and materials.—A branch of the Shrewsbury & Chester Railway has been brought to the pit's mouth.

Lot 27.—ONE-THIRD SHARE in the STEDDFOD LIME WORKS and ROCKS, at Minera, near Wrexham.

Lot 28.—ONE-FOURTH SHARE in the STEAM PUMPING ENGINE and MACHINERY at the CRAIGIOG LEAD MINE, at Llanarmon-yn-Yale, in the county of Denbigh.

Lot 29.—TWO (16ths) SHARES in a large PUMPING ENGINE and MACHINERY in the CITY LAND, at Minera aforesaid.

Lot 30.—ONE-FIFTH SHARE in two large PUMPING ENGINES on Mr. R. V. Kyrke's tenement, at Minera.

Lot 31.—TWELVE and a HALF (53ds) SHARES in the POOL PARK LEAD MINE, near Wrexham, now working to a profit.

Lot 32.—FOUR (18ths) SHARES in that promising and now profitable LEAD MINE, called the TALACRE MINE, in the parish of Llanasa, in the county of Flint.

POLICY.

Lot 33.—A POLICY OF INSURANCE of the Sun Life Office, for the sum of FIVE HUNDRED POUNDS, payable within three months after the death of Mrs. Catherine Williams, of Mold, aged 51 years, or thereabouts, and subject to an annual premium of £17 2s. 11d.

The principal part of the freehold estates lies within the distance of 4 miles from the populous town of Wrexham, from whence there is a railway communication to all parts of the kingdom. The various farms, many of them having been at different times in the occupation of the late proprietor, are in a high state of cultivation: they are situate in a fertile and sporting country, and in a neighbourhood distinguished for respectability, and abounding in game. The mineral trade in the immediate locality of the bulk of these estates is in a state of great activity; and a branch of the Shrewsbury and Chester Railway has been brought very near to several of the estates now advertised for sale. The roads of the neighbourhood are good, and the facilities for all kinds of internal communication are great. Lime abounds within a very short distance. A church has been erected at Brymbo, within a mile of the various farms in that township.

The property in the parish of Wrexham may be viewed upon application to James Kyrke, Esq., of Glascoed, near Wrexham; Mr. John Griffiths, of Glanrafon, Brymbo; and the whole thereof upon reference to the various tenants. William Rowe, Esq., of Mount-street House, Wrexham, will give information as to the strata of coal, &c.

Printed particulars, with plans of the estates, may be had from the said James Kyrke and William Rowe; George Morgan, Esq., official assignee, Liverpool; the Wynnstay Arms and Lion Hotels, Wrexham; the Black Lion Hotel, Mold; the Wynnstay Arms Hotel, Oswestry; the Royal, Feathers, and Albion Hotels, Chester; the White Lion Hotel, Ruthin; the Crown Hotel, Denbigh; and also from John Buck Lloyd, Esq., Exchange-alley; Messrs. H. and T. Forshaw, solicitors, Castle-street; Messrs. Evans and Son, solicitors, Commerce-court, Lord-street; and Richard Blundell, Esq., solicitor, 6, Cook-street, Liverpool; Messrs. Williams and Edwards, solicitors, Denbigh; Messrs. Hayward and Son, solicitors; Messrs. Longueville and Williams, solicitors, Oswestry; John Lewis, Esq., solicitor, Wrexham; Robert Edwards, Esq., solicitor, Ruthin; and at the office of Messrs. James and Owen, solicitors, Wrexham, where a general map of the estates and sections of the mines may be seen, and other particulars obtained.
Wrexham, Sept. 10, 1849.

TO COLLIERY OWNERS, RAILWAY PROPRIETORS, DOCK COMPANIES, ENGINEERS, CONTRACTORS, AND OTHERS.

At the COLLIERY, CHARTERSHAUGH, near the Washington and Pensher Stations of the York, Newcastle, and Berwick Railway.

MR. W. I. BARKER has been favoured with instructions to OFFER FOR SALE, BY PUBLIC AUCTION, without reserve, on Wednesday, the 26th day of September, 1849, the whole of the valuable 5

COLLIERY PLANT,

WORKING STOCK, and MATERIALS, comprising a first-rate HIGH-PRESSURE PUMPING ENGINE, of 80-horse power (by Hawks), nearly new.
A capital HIGH-PRESSURE WINDING ENGINE, of 34-horse power (by Hopper), new.
An excellent HIGH-PRESSURE WINDING ENGINE, 16-horse power (by Abbot), new.
THREE CYLINDRICAL BOILERS, 30 feet by 6 feet.
Two 16-inch set of pumps, with spears and spear plates, main and tail crabs, gins, ground spears, ground blocks, main & ground crab ropes, 4 coal screens, shaft frames and pulleys, sheer legs, 4 coal screens, NUT COAL APPARATUS, headstead, conductors, cages, and keeps, COAL DROP, for loading keels (nearly new), several lots of COAL TUBS, for keels,
FIFTY-EIGHT WOOD AND IRON COAL WAGGONS,
Malleable and cast-iron RAILWAY and CHAIRS, crossings and points, underground ditto ditto, coal tubs for underground, flat and round ropes, sleepers, lathe, patterns, deals, timber, smiths' bellows, vices, anvil, tools, nails, joiners' benches, FOUR CARTS, trapping, agricultural implements, an excellent horse for colliery or farm purposes, FOUR COUP CARTS, various agricultural implements, new and old iron and metal, old rope, and a large quantity of other miscellaneous articles and colliery stock.

Catalogues may be had on and after the 17th inst., at the office of the auctioneer.
Sale to commence at Ten o'clock precisely.

The Pensher and Washington Stations are within 20 minutes' walk of the colliery.

(From Bradshaw's *Guide for September.*)

WASHINGTON STATION, ON THE YORK, NEWCASTLE, AND BERWICK RAILWAY.

Arrival of the Up Trains.

6.0	8.40	11.30	A.M.
2.43	6.28	8.28	P.M.

Arrival of the Down Trains.

9.5	12.30	3.25	A.M.
5.29	7.56	8.23	P.M.

PENSHER STATION.

Arrival of the Up Trains.

6.5	11.35	—	A.M.
2.47	6.32	8.33	P.M.

Arrival of the Down Trains.

9.0	—	—	—	A.M.
12.25	5.24	7.52	8.17	P.M.

Bridge-street, Sunderland, Sept. 6, 1849.

WHITWELL COLLIERY.

MR. W. I. BARKER will PEREMPTORILY SELL, BY AUCTION, on Tuesday, October 16, 1849, at Twelve o'clock at noon, for One precisely, at the George Inn, Pilgrim-street, NEWCASTLE-UPON-TYNE, 6

THIRTY-EIGHT (64ths) SHARES

(late of Messrs. Andrew White and Richard White) of and in the well-known current-going and most excellent colliery, called the WHITWELL COLLIERY, situate at WHITWELL, in the county of DURHAM, comprising a royalty of upwards of 635 acres, or thereabouts, of coal of first-rate quality, there being two seams opened out—the Hutton Seam and Low Main Seam, worked by two pits, and with pitmen's houses, workshops, engines, machinery, and all necessary stock and conveniences for carrying on the colliery on an extensive scale.

The colliery is situate adjoining to and communicating with the main line of the York, Newcastle, and Berwick Railway (the Durham and Sunderland Branch whereof is constructed to the bank head), and the coal can be shipped either at the ports of Sunderland or Hartlepool, or on the River Tyne. The convenient situation, high reputation of the coal, and many other advantages of this colliery, afford an excellent opportunity for any one desirous of an investment in a colliery, and the purchaser of these shares will be entitled to the acting direction and management of the undertaking.

The colliery may be viewed on application to Mr. Robson, Whitwell Grange, near Durham; and further particulars known on application to Messrs. J. J. and G. W. Wright, solicitors, Sunderland.—Sunderland, August 30, 1849.

EXTENSIVE IRON-WORKS FOR SALE,
BY PRIVATE BARGAIN,
THE BLAIR IRON-WORKS,

Belonging to the Ayrshire Iron Company, with the whole MINERAL FIELDS held by the said company, under favourable leases, including the MALLEABLE IRON-WORKS, immediately adjoining, so far as erected—all as particularly described in former advertisements.—There is a large STOCK of IRONSTONE on the ground, which may be had at a valuation. 7

For further particulars apply to Mr. Biggart, at the works; Mr. Watson, 32, and Mr. Brown, 35, St. Vincent-place, Glasgow; Messrs. M'Clelland and Mackenzie, accountants, there; Messrs. Gibson-Craig, Dalziel, and Brodie, W.S., Edinburgh; or Messrs. Montgomerie and Fleming, writers, Glasgow—the last being in possession of the title-deeds.
Glasgow, June 20, 1849.

WHEAL MARY CONSOLS MINES.—TO BE SOLD,

BY PRIVATE CONTRACT, the ABOVE valuable MINES (consisting of Wheal Mary, Wheal Sisters, and some smaller setts), with the whole of the valuable MATERIALS thereon, including TWO excellent STEAM-ENGINES, TWO WATER-WHEEL DRAWING MACHINES and CRUSHER, and every other requisite for WORKING an extensive COPPER MINE. 8

The present adventurers have sold from these mines, mostly within the last three years, copper ores to the amount of £25,023, and tin to the amount of £7088. The workings of late have been on two tin lodes and one copper lode, and the driving a cross-cut, to intersect another copper lode.

At the 50 fathom level west, on the copper lode, is a course of ore, 1 ft. big, just coming under ground, which was productive for a great distance in the level above (the 25), and under the 50 the course of ore in two sinks averages about the same size as in the end. This lode has been worked at a loss, for want of a new shaft, 50 fathoms deep—to the expense of which some of the present shareholders decline contributing, but others of them are ready to join in purchasing and carrying on the mine.

For further particulars, and to treat for the purchase of the whole, or part, of the concern, apply to Edward A. Crouch, Liskeard.
Dated the 31st of eighth month (August), 1849.

SALE OF MINING MATERIALS, BY PRIVATE CONTRACT, or TENDER,

with or without the Lease of the Mine.—The committee of adventurers of the DEAN PRIOR AND BUCKFASTLEIGH MINES, situate in the parish of BUCKFASTLEIGH, county of DEVON, are ready to TREAT with PARTIES for the DISPOSAL of the MACHINERY and MATERIALS on the said mines; with also the LEASE, or otherwise, held under the Earl of Macclesfield, at 1-15th dues, until an engine shall be erected, and then at 1-18th dues. Some thousands of pounds have been expended on the mine, and the machinery is in the most complete and perfect order—consisting of 1 40-feet wheel, 3 feet 6 inches breast; 1 24-feet wheel, 4 feet 7 in. breast, and 1 18-feet wheel, 3 feet breast, with stampheads, grinder, 50 fathoms pumps, working barrels, windbores, &c., fixed, and other useful materials. 9

An inventory may be seen, and all information acquired, on application to Mr. H. English, mining engineer, 25, Fleet-street, London, who is empowered to treat for the disposal of the same, where specimens of the ore, with plans and sections, may be seen, and every information readily afforded.

VALUABLE AND EXTENSIVE MINES OF COAL AND IRONSTONE.

TO BE LET, ON LEASE, on most advantageous terms, the COAL and IRONSTONE under a very large tract of land, in the parish of RUABON in the county of DENBIGH, adjoining the Shrewsbury and Chester Railway. 10

The proprietors of the ESTATES on which the Ponkey and Aberdarfyn Iron-Works were formerly carried on, have made arrangements TO LET BOTH PROPERTIES TOGETHER, which will give the lessee of them facilities to carry on a lucrative business—very rarely to be met with.

The COALS and IRONSTONE on these ESTATES may be raised at very much less than an average cost, and the quantity proved in them (besides what are under a very large portion of one of them, in which there is no doubt they will be found) is estimated will supply iron-works with materials to make 400 tons of pig-iron weekly for upwards of 30 years, as well as 50,000 tons of the much and justly-celebrated Yard and Wall and Bench Coals per annum for sale, for the same period.

Printed particulars of the property, and lithographed plans of the estates, showing the minerals under them, with calculations as to the expense of making iron from them, as compared with that of manufacturing it in Staffordshire, may be had upon application at the office of the *Mining Journal*, 26, Fleet-street; and at J. Boydell's, 54, Threadneedle-street, London; and at Messrs. Longeville and Williams, solicitors, Oswestry.
Oswestry, June 6, 1849.

DUISBURG IRON-WORKS AND MINES,
IN WESTPHALIA, CLOSE TO THE RHINE. 11

Managed in England according to the principles of the "Cost-book System," and in Prussia as a *Société in Commandite*, under laws limiting the liability of the shareholders to their personal subscription.
Company's Offices, 28, Moorgate-street, City.

TO RAILWAY CONTRACTORS AND OTHERS.—

TO BE SOLD, BY PRIVATE CONTRACT, a QUANTITY of RAILWAY MATERIALS, lying at the GLOUCESTER STATION—viz., about 30 tons of flat-bottomed T RAILS, from 34 to 36 lbs. per yard; about 20 tons, 44 lbs. per yard; about 20 tons, 26 lbs. per yard. Also, 50 EARTH WAGGONS, holding 2½ yards 3 inch axles, 2 feet 6 inch wheels, nearly new, having been used only two or three weeks. Also, sundry TUNNEL MATERIALS, water barrels, skips, drums, pulley-wheels, iron gearings, for horses to work in, &c.—Apply to Mr. Mansell, stationer, &c., Gloucester. 12

TO BE SOLD, BY PRIVATE CONTRACT, a LEASE, for 21 years, of a LEAD MINE, in CARNARVONSHIRE, within 1½ mile of a shipping port.—Every information may be had by applying (by letter, post-paid) to Thomas Richardson, South Penrallt, Carnarvonshire. 13

STEAM-ENGINE FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT, an 85-inch cylinder STEAM-ENGINE, 10-feet stroke, equal beam.—Application to be made to Messrs. Hocking and Loam, engineers, Redruth. 14

COAL.—TO BE SOLD, OR LET, either in one or more lots, all that valuable VEIN of COAL, commonly called the UPPER MOUNTAIN MINE, extending over about 1000 acres—situate in the township of GREAT HARWOOD, in the county of Lancaster. The mine has been recently proved, and found, at 77 yards from the surface, to be 5 feet in thickness, and of an excellent quality. The above property is within a short distance of the Leeds and Liverpool Canal, and in the midst of a populous and large manufacturing district. 15

A section of the borings may be seen by applying to Mr. Boosie, Rufford Hall, Ormskirk; or to Mr. Whittle, Charnock Richard, Chorley—to either of whom proposals may be sent.

THE PROPRIETORS OF MINERAL ESTATES, who are

desirous of MAKING them LUCRATIVE TO THEMSELVES, either by way of SHARES, for a definite term of years, or to SELL the SAME, may hear of CAPITALISTS who are ready to embark in such speculation, *provided* they can be tolerably well assured that success will attend such undertakings. 16

Principals only are requested to answer this advertisement.
Address (by letter, post-paid) John James Coward, Esq., Lansdowne-cresent, Bath, who will also take shares for himself, to a considerable amount, in a *bona fide* transaction.

WHEAL ANDERTON MINE.—WANTED, a CLERK, to

keep the accounts of the mine, and to deliver stores, &c.—Persons wishing to become candidates for the situation, are requested to apply to Captain James Carpenter, manager and purser of the mine (by letter), on or before the 18th Sept., 1849, and to say what salary they expect per month; and also to forward any testimonials they may think proper, which will be duly returned to them after the 20th Sept., on which day the appointment will be made.—Dated Wheal Anderton Mine, Sept. 7, 1849. 17

VALUABLE MINE SHARES TO BE SOLD, BY PRIVATE

TENDERS.—THREE (50ths) SHARES in the united TIN MINES of WHEAL MARY and WHEAL CHERRY, in the parish of UNY, LELANT, county of CORNWALL, together with the LIKE SHARES in the ENGINES, MACHINERY, and MATERIALS, which are extensive and complete, for carrying on the workings on the most extensive scale. The sett extends near a mile on the course of the lodes, and more than a quarter of a mile wide. 18

These mines are between the celebrated tin mines of Wheal Margaret, the present price per share of which is £225, and Wheal Reeth, the price is £150.—The district is known to be the best tin one in the county.

There is no market price on the shares offered; the adventurers are a compact body, and no shares have hitherto been offered to the public.

Further particulars may be had on application to Mr. R. R. Micheli, Marazion, Cornwall, the agent of the mines; or of Mr. Hyde, 61, Fleet-street, London—to the latter offers for the three shares, together or separate, to be addressed.

The purchasers will be entitled to the dividends from and after the 25th Sept., 1849.

MINING PROPERTY.—Mr. JAMES HERRON, MINE

AGENT, 33, CLEMENTS-LANE, LOMBARD-STREET, has received instructions to DISPOSE of SHARES in FIRST CLASS MINES, paying regular dividends, and yielding to the purchaser from 17½ to 25 per cent. upon his outlay. He is also in a position to transact business in the following—viz.; Imperial Brazilian, Cocaes, St. John del Rey, Santiago, United Mexican, Guadalcanal, Treleighs, Tincroft, Lewis, Treviskey, Great Devon Consols, South Wheal Frances, East Wheal Rose, East Pool, Trelawny, South Wheal Basset, Condurrow, and Great Consols Mines. 19

MESSRS. JOHN T. TEAGUE & CO., MINE SHARE-

BROKERS, 4, KING-STREET, TRURO, CORNWALL, have BUSINESS to do in the following MINES—viz.: East Wheal Rose, South Basset, North Pool, West Buller, South Caradon, South Tolgus, Trehane, Stray Park, Tincroft, Wheal Henry, Comfort, South Wheal Josiah, Camborne Consols, West Providence, East Buller, &c. 20

MR. HENRY VATCHER, MINING AND RAILWAY

SHAREBROKER, EXETER.
Competent and experienced AGENTS provided to INSPECT MINES, at the shortest notice. 21

MR. R. TRIPP, MINING AGENT and SHAREBROKER,

BEDFORD CHAMBERS, BAMPFYLDE-STREET, EXETER. 22

MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND

AND MINING SURVEYOR,
No. 15, OLD BROAD-STREET, CITY. 23

MR. JAMES STRIDE, MINING AGENT, AND DEALER

IN SHARES, 27, *SPRING-GARDENS, LONDON.* 24

MR. GEORGE BATE, JUN., CIVIL ENGINEER AND

SURVEYOR, *WOLVERHAMPTON.*
Offices in Queen-street, corner of Piper's-row. 25
N.B.—UNDERGROUND MINING SURVEYS accurately executed.

JAMES LANE, MINING SHARE DEALER,

80, *OLD BROAD-STREET, LONDON.* 26

ASTURIAN MINING COMPANY.—Notice is hereby given,

that the ADJOURNMENT of the ANNUAL GENERAL MEETING, from the 30th day of August last, will be HELD on Tuesday, the 25th day of Sept. inst., at the company's offices, No. 9, Austinfriars, London, for the purpose of receiving the Report of the Committee of Investigation, and transacting other business.—The chair will be taken at One o'clock precisely.

Also, that a SPECIAL GENERAL MEETING of the shareholders will be held immediately after the conclusion of the business of the said adjourned meeting, on the said day, and at the same place, to take into consideration the statement of the Committee of Investigation relative to the present position of the company, and the steps necessary to be taken in consequence. Also, to take into consideration the proposition which has been received from Messrs. Munoz and Grimaldi; also, to sanction the appointment of liquidators, to be authorised to refer disputed questions to arbitration, and make arrangements for holding the next general meeting of shareholders.

By order of the board, K. MACKENZIE, Secretary. 27
Offices of the company, 9, Austinfriars, London, Sept. 7, 1849.

CAMBORNE CONSOLS MINING COMPANY—NOTICE

OF CALL.—Notice is hereby given, that the directors have this day resolved that the subscribers, or shareholders, in this company PAY, and they are hereby required to pay, on or before the 25th day of Sept. next, into the bank of Messrs. Prescd and Co., 189, Fleet-street, London, a CALL of ONE POUND upon each and every share held by them in this company, and that, pursuant to article 116 of the company's Deed of Settlement, all and every share, or shares, upon which the said call of £1 per share shall not be paid within 14 days after becoming due, will be subject to absolute forfeiture.

By order of the board of directors, H. L. T. VON USTER, Sec. 28
London, August 23, 1849.

MEXICAN AND SOUTH AMERICAN COMPANY,

10, New Broad-street Mews, Sept. 10, 1849.—Notice is hereby given, that the directors of this company have made a CALL of ONE POUND per share on the shares in this company, and that the same is to be PAID on the 17th of October next, to Messrs. Barclay, Bevan, and Co., for account of the directors.

By order of the directors, GEO. COPPARD. 29
N.B.—The bankers receipt is to be brought to this office, with the certificates of the shares, which must be left one clear day to have the payment endorsed thereon.

REAL DEL MONTE MINING COMPANY,—The Holders

of SHARES in the LATE REAL DEL MONTE COMPANY are hereby informed, that the PURCHASERS of the PROPERTY in MEXICO have RESERVED for them certain SHARES of the NEW COMPANY, in MEXICO; particulars of which may be ascertained on application (before the 26th inst.) to Mr. Phillips, No. 6, Queen-street-place, Southwark-bridge—removed from No. 2, Duke-street, Adelphi. 30

WEST DOWNS MINE—Having received a REQUISITION,

signed by a majority of the shareholders, and representing a majority of the shares in the above mine, CALLING upon me to CONVENE a MEETING of the shareholders, to be held on the mine, or such other place as may be most convenient to them, to receive the resignation of the present agents, and appoint others, and on general and other business connected with the mine, I hereby give Notice, that a MEETING of the adventurers in the above mine will be HELD on the mine on Monday, the 24th inst., at Twelve o'clock precisely, for the foregoing purposes. JAMES DIAMOND, Purser. 31
Tavistock, Sept. 10, 1849.

MANUFACTURE OF GLASS.

[Patent granted to Obed Blake, of the Thames Plate Glass Company, Blackwall, Middlesex, manager, for certain improvements in the process or processes of manufacturing and finishing plates, sheets, or panes of glass.]

Before describing his invention, the patentee states that the processes already in use for the purpose of finishing plates, sheets, or panes of glass, consist in grinding and smoothing plate glass, by cementing with plaster of paris, upon a fixed horizontal bed, one or more plates, other plates of glass being cemented upon the lower face or runner, which is traversed by an eccentric motion over the plates of glass; upon the lower bed sand and water are thrown, and the eccentric motion is continued until the plates of glass are ground flat, and as nearly smooth as can be conveniently attained by this process, finer emories being used as the work progresses; but these grinding machines do not admit of being employed with very fine emery, and the plates of glass are, therefore, smoothed by hand, as follows:—A horixontal bed or table of stone, made quite flat, is covered with wet canvas, and a plate of glass is laid upon it; fine emery, moistened with water, is then sprinkled over the surface of the glass, and another plate of glass, called a runner, is laid upon the lower plate, and traversed by hand over it, with a swinging stroke backwards and forwards, so as to describe about the third of a circle around the centre of the runner, which is at the same time shifted a few inches both transversly and longitudinally during the stroke; every stroke thus follows a slightly different path from the preceding one, and the runner is also occasionally twisted round; as the smoothing proceeds, the adhesion of the hand placed flat upon the runner is found to be sufficient to traverse the runner over the lower plate.

The present invention is intended to perform the smoothing process by machinery, in the same general manner as it is now effected by hand. Instead of employing cement, or the adhesion of the human hand, for holding the glass, it is proposed to employ the adhesion produced by a vacuum. For this purpose, a hollow vessel, which may be called a vacuum block, is employed. Several plates may be connected together to constitute one runner, employed in machinery for smoothing glass. The runner is capable of three horizontal motions, independent of each other, as simple motions, or connected together, to produce a compound motion similar to hand work.

We omit the description of the mechanical details of this invention, as they would be unintelligible without the drawings.

Claim.—Having described the nature of the invention, and the manner the same is to be performed, the patentee then states that he desires it to be distinctly understood that he does not claim the exclusive use of any of the seperate parts above mentioned and referred to, except in so far as the same may be employed for the purposes of the said invention; neither does he confine himself to the precise details of the means or apparatus set forth and described (as such details will necessarily vary), so long as the peculiar character of the invention is retained. But what he claims as of his invention is the mode or modes of smoothing plates, sheets, or panes of glass, by means of suction or vacuum blocks, arranged in combination with runners and other machinery as set forth and described, and illustrated by the drawings annexed to the specification.

FRANKLIN COXWORTHY'S DISCOVERIES IN NATURAL PHILOSOPHY.—No. VI.

We venture to assume that we have successfully disposed of the several gases evolved from the atmosphere, and from the vegetable kingdom, under the respective influences of combustion, respiration, and the decay of vegetable matter; and, in order to complete the investigation, we have now to account for their restoration to the grand reservoirs from which they were originally liberated. This task, it is pleasant to say, is not difficult to perform; and, in its discharge we shall have the gratification of affording to our readers a beautiful illustration of the simple, yet ever efficient, manner in which Nature accomplishes her purpose. The more easily to do this, we must take into consideration another of Franklin Coxworthy's propositions, which, like the two previously given, we place in juxta-position with the doctrine antecedently received.

OLD DOCTRINE.	NEW DOCTRINE.
That the atmosphere is a mechanical mixture, the elements being held together by diffusion.	That the atmosphere is a chemical compound, *originally formed, and now regenerated, by vegetation.*

Ammonia, as we have already demonstrated, is contained in great quantities both in snow-water and rain. We have also shown that the combustion of 35,000,000 tons of coal, or carbon, the quantity consumed in this country alone, must yield no less than 130,000,000 tons of carbonic acid, since carbon combines with oxygen in the proportion of 27 to 73; and that, as carbonic acid has a specific gravity of 1·5, it must have a gravitating influence immediately that it acquires a preponderance by contact with the air, and will, therefore, redescend to the globe's surface and combine with water, in which it is highly soluble. The fluid, then, that presents itself to the roots of plants, contains—

Ammonia	Hydrogen Nitrogen	Hydrogen. Air.
Carbonic acid	Oxygen Carbon	Carbon.
Water	Oxygen Hydrogen	Oxygen. Hydrogen.

And we know that the non-nitrogenous portion of the vegetable kingdom, abstracts from the sap, or assimilates, hydrogen, carbon, and oxygen, but not nitrogen. The last named gas, generally speaking, being a constituent of seeds only; and cannot, therefore, form a part of the description of plants to which we have alluded, and of which the forest tree may be cited as a familiar example. As far as actual demonstration by extensive experiments might be carried, it is unfortunate that it cannot be added to the inductive reasoning of Franklin Coxworthy, in this branch of his discoveries, for want of time and means, both of which, in these days of professed liberality in scientific matters, ought to be placed amply at his disposal. Evidence in its favour, however, is not wanting to sustain his theory. If it is not acknowledged that air is generated by plants—which he maintains to be the case—it is admitted that they yield vast quantities of oxygen, and we know that they possess no smell to indicate the escape of undecomposed ammonia. And as much electricity, the now recognised agent in nature, is set free by vegetation, we must, in the absence of any evidence to the contrary, assent to the probable correctness of his conclusions on this important branch of natural philosophy—that, in fact, a portion of the oxygen disengaged by the tree from carbonic acid and water, under the highly electrical influence of the plant, combines, chemically, with the nitrogen of the ammonia in the re-formation of air. Surely this is a subject worthy of the attention of the philosopher? It is easy of investigation with proper appliances. There is no absurdity involved in it. On the contrary, its proper elucidation may be the means of confering great benefits to mankind. And, as the chemical section of the British Association is now engaged in ascertaining the correctness of two of Franklin Coxworthy's propositions—the growth of plants in an atmosphere of carbonic acid, and the "breathing" functions of the animals of the carboniferous period—we strongly recommend such an extension of research as shall comprise the three scarcely separable investigations.—S: *Cheltenham Journal.*

ALLEGED DISCOVERY IN VENTILATION.—In the last number of the *Literary Gazette* there are some observations on an alleged discovery, by Dr. Chowne, of a property in the syphon for the ventilation of mines, ships, buildings, &c., which had never before been discovered, and for which he has enrolled a patent. The writer states, "that the improvements are based upon an action in the syphon which had not previously attracted the notice of any experimentor—viz.: that if fixed with legs of unequal length, the air rushes into the shorter leg, and circulates up, and discharges itself from the longer leg." Now, without having any description of Dr. Chowne's invention before us, and, of course, not being able to form any opinion of its merits, we cannot subscribe to the assertion that this property of the syphon was never before noticed. It is the great principal of ventilation in most cases adopted naturally; what is the downcast shaft of a mine but the short leg of a syphon when the upcast has a chimney to render it the longer leg? All house ventilation proceeds on the same principle; every room open to currents of air from doors and windows becomes the short, and the chimney the long, leg of the syphon, through which the deteriorated air and gases ascend. We shall, however, endeavour to ascertain the mechanical arrangement of the patent, and most heartily shall we acknowledge its merits, if really an improvement.

THE WINDSOR RAILWAYS.—The struggle between the Great-Western and South-Western railways as to which shall first complete a railway into Windsor is likely to terminate in favour of the former, arising from the unforeseen accident of the sinking of the bridge at Blackpotts on the latter, and which it is expected will have to be rebuilt. Meanwhile, both companies are making rapid clearances for their stations in Windsor. The houses purchased by the Great-Western for their station in George-street are being sold and pulled down, while the occupiers of those in Datchet-lane have received notices from the South-Western for a similar purpose.

MINING IN THE OLDEN TIMES—No. I.

Although it has often been urged that mines were wrought in England previous to its conquest by the Romans, the most received opinion is, that the art of mining was first introduced by those people. Their descendants are said to have settled themselves, partly in the high Peak of Derbyshire, some few about the Forest of Dean, and others in Cornwall, all of which governed themselves by the Gallic and Roman laws in force amongst them, separate from all other subjects of Great Britain, deciding all differences in their own courts by ancient laws and customs. Owing to civil dissensions in the time of the Saxons, and the disturbed state of the country for the first century of the Norman dynasty, but little notice was taken of them until the sixteenth year of King Edward I., who caused a writ of inquiry to be executed, bearing date the 28th day of April, attested by his cousin. Edmond, Earl of Derby; at the return of these writs the inquisition of which was held at Ashbourn before Reynold of the Ley and William of Memil, the king suffered the lead miners to enjoy the ancient privileges of their own laws and their mines, until his will and pleasure was further known; as this was the first writ issued, a copy from the original in the rolls of the Exchequer may not be uninteresting: "Edward, by the Grace of God, King of England, Lord of Ireland, and Duke of Acquitain, to the sheriff of the county of Derby, greeting, knowe ye that we have assigned our faithful and well-beloved Reynold of the Ley, and William of Memil, to inquire by the oaths of good and lawful men of your country, by the which the truth may be best known, of the liberty which our miners do claim to have in those parts, and which they have hitherto used to have, and by what means and how, and from what time, and by what warrant; and, therefore, we do command that at a certain day and place, which the said Reynold and William shall appoint thee, thou shalt cause to come before them so many and such good and lawful men of thy bailwick, by the which may there the best be known in the premisses by the inquiry, and that thou have there thy writt." The same king gave the tinners some new laws, and called them Court Parliament of Stannaries; by this he freed them from all pleas of the natives touching the courts, and from answering before any justices, save only the keeper of the Stannaries (plea of land, life, and member excepted). Neither are they to be kept from work but by the said keeper, and idemnifies them from tolls, gives them liberty to dig tin and turf anywhere in the said county, and to turn water-courses for their works at pleasure, with many other privileges, both to the keeper and tinners, concerning weighing and selling their tin. In this reign the mines of Combmartin, in Devonshire, were worked; in the 22d year of his reign, William Wymundham accounts for 270 lbs. weight of silver; it was forged for Eleanor, Duchess of Bar, daughter to the king, married the year before; in the 23d year 520 lbs. weight, and in the 24th year 704 lbs. weight, were fined in wedges from the same mine. The troubles that occurred in the reign of his successor Edward caused the mines to be much neglected. In the 15th year of Edward III., letters patent were issued, granting to his brother John of Eltham, Henry Earl of Northumberland, and others, the copper mines of Skildane, in Northumberland, and the copper mine of Alston Moor, in Cumberland, and the copper mine near Richmond, in Yorkshire, to hold for 15 years, paying to the king the eighth part net, and to the lord of the soil the ninth, as they arise. The same king, in his 18th year, by his letters patent, granted to William Goderswick all mines of copper and lead in Northumberland and Westmoreland (not granted before) for 10 years, paying to the king a fifteenth part of the net, and to the lord of the soil as they can agree. In the 32d year of his reign he granted unto John Ballenter and Walter Belboter, all his mines of gold, silver, and copper in the county of Devon for two years, with liberty to dig and search (except in gardens), yielding 20 marks the first year, and the fifth part the second year, and all other persons are excluded from digging there. Among the remembrances of the Exchequer is one to John Jugg and Henry of Wisbeach, which states, that being informed that certain mines of lead, mixed with gold and lead ore, are found in the county of Salop, he wills that the Barons of the Exchequer and the Treasurer may be certified of the manner of finding the said mines, and whether any hath been transported, and by whom, and empowers them to inquire upon oath, and commands them to certifie his treasurer and barons thereof. Richard II., in the eighth year of his reign, by letters patent dated the 11th of June, granted to Richard Wake, clerk, his mines of gold and silver in the county of Devon, and liberty to dig (paying damage to the owner of the grounds), as well within the liberties as without, for 10 years, paying a tenth part of the profit into Holy Church, and to the Exchequer the ninth part, and all other persons to be excluded. In the 4th of June, in the 17th year of the same reign, we find a precept to Hugh of Burnell and the sheriff of Shropshire; in this it recites, that "we are informed by James Miner, of a mine of copper or silver, in or near the lordship, or priory, of Wenlock, whereout no little profit would accrue to us, if wrought by experienced workmen; we assign you to ordain the said James to work the same without any lett, he not doing anything against the laws of our kingdom, or demolishing any houses or gardens. Henry IV., the 11th of May, in the second year of his reign, commands Walter Fitzwalter, upon information of a concealed mine of gold in Essex, to apprehend all such persons, as he in his judgment thinks fit, that do conceal the said mine, and to bring them before the king and his council, there to receive what shall be thought fit to be ordered. It seems that about this period the art of transmutation was practised to a great degree. In this reign flourished Sir George Ripley, the famous alchemist, who, it is said, gave yearly to the Knights of Rhodes 100,000*l.* towards maintaining the wars they were constantly waging to preserve the last seat of eastern Christendom from the Turks. A great many persons in this and the preceding reign had spent their estates, and ruined themselves and their families in attempting this chimerical art, which is thus characterised by one of the monkish writers of the day—"*Ars sine arte, cujus principium est mentire, medium laborare et finis mendicare.*" In order to prevent the ruin of unwary persons, and fearful that any subject possessing the art of multiplication of metals would be able to engross too great a share of sovereign power, probably to the detriment of the Crown and kingdom, and subvervive of all established relations, the Parliament, in the fifth year of this king's reign, passed an Act in these words—"It is ordained and established, that none from henceforth shall use to multiply gold or silver, or use the craft of multiplication, and if any the same do, that he incur the penalty of felony in this case." Notwithstanding this Act, his grandson, Henry VI., being impoverished by the wars of France, granted a patent to Sir Edmund Trafford and Sir Thomas Ashton, of Lancashire—"*Metalla imperfecta de suo proprio genere transferre et per artem in aurum, sive argentum perfectum transubstantiare ad omnimodos probationes et examinationes, sicut aliquid aurum, sive argentum in aliqua minera crescens.*" The same king, in the 34th year of his reign, by the advice of his Council and Parliament, grants four successive patents and commissions to several knights, citizens of London, chemists, and monks (with a *non obstante* to the law of Henry IV.), to find out the philosopher's stone or elixir, that would transubstantiate other metals into most true and solid gold and silver. In his 25th year he granted new letters patent to 10 persons of eminent quality, therein mentioned, to judge and certify to him whether the thing were practicable or no, and whether it would conduce more to the hurt or good of the kingdom. No one was prosecuted upon this statute till the 7th of Edward VI., when a man of the name of Eden confessed himself guilty of multiplication—viz., that he had practised to make the fifth essence, whereby all metals may be made gold or silver; at the same time he accused a prisoner, of the name of Whalley, in the Tower, that he moved and procured him to practise that art. But a general pardon being passed at that time, in which felony was included, Eden escaped, though Whalley, as accessary to the felony, did not, being one of those who were in the Tower, and excepted from pardon. The statute against the multiplying of gold and silver was repealed the first year of William and Mary, in order to encourage persons to extract the more precious from the baser metals, which, precious to the repeal of the Act, they were afraid to perform, fearful of falling under the penalty. In the 7th year of Henry IV., he granted to Henry and John Darby all the lead mines holding silver in the county of Devon for ten years, on condition of paying to him 9 lbs. of pure silver yearly, and to all others their dues; William Charlton, the prior of Pilton, is appointed receiver and comptroller. No records appear to have been issued during the short but glorious reign of his successor, Henry V. During the long and troublesome period of his son, Henry VI., several warrants were issued: the first of which we have notice, is dated the 24th February, the fifth year of his reign; in this he grants to John Duke of Bedford, Regent of France and Protector of England, all mines of gold and silver, within the kingdom of England for 10 years, paying the tenth part to Holy Church, to the king the fifteenth, and to the lord of the soil the twentieth part to dig, but not under houses, in arable land, or meadow, without license of the lord of the soil, and to make reasonable amends for any damage. On the 11th of July, the 17th year of his reign, he grants to John Sellers all mines of gold and silver in Devon and Cornwall, and all mines of lead holding silver or gold, to hold from the expiration of 12 years, formerly granted to the Duke of Bedford for 20 years, paying the fifteenth part of pure gold and silver, but not to dig under any houses or castles; a clause is inserted to provide for wood and labourers. On the 10th of September, 30th of anno regni, he makes his chaplain, John Bottwright, comptroller of all his mines of gold and silver, copper, latten, and lead, within these two counties. On the 20th June the year following, the same John Bottwright is nominated provost and governor of all his mines; by this deed all mines of copper, tin, and lead, whereout any gold or silver shall be fined, to hold during his good behaviour, paying the tenth part of pure gold and silver, copper, tin, and lead, to be fined at his own charge, with power to let and set for 12 years, paying to the king the tenth bowl of ore of copper, tin, and lead, holding gold or silver, and to dig without interruption, the fee of the church excepted.

[To be continued in next week's Mining Journal.]

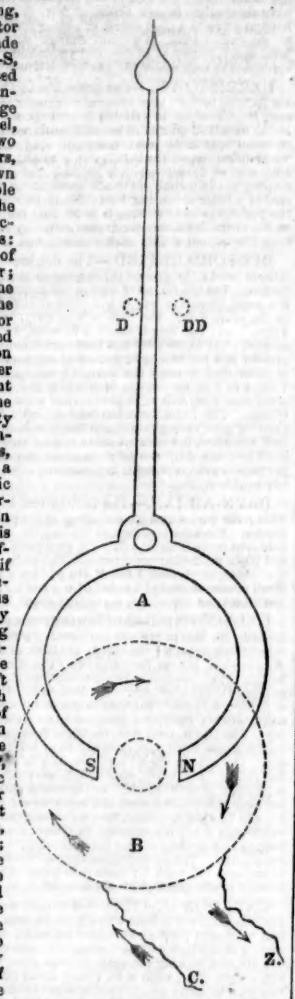
SUNDERLAND DOCK.—We understand that the owners of the Hetton Colliery have arranged with the directors of the Sunderland Dock to ship the whole of their coals at that place, and to abandon their present railway when the dock is fully opened; they will then bring all their coals down the Durham and Sunderland Railway.—*Sunderland Herald.*

A FEW REMARKABLE FACTS ABOUT ELECTRICITY AND ELECTRIC TELEGRAPHS.—No. V.

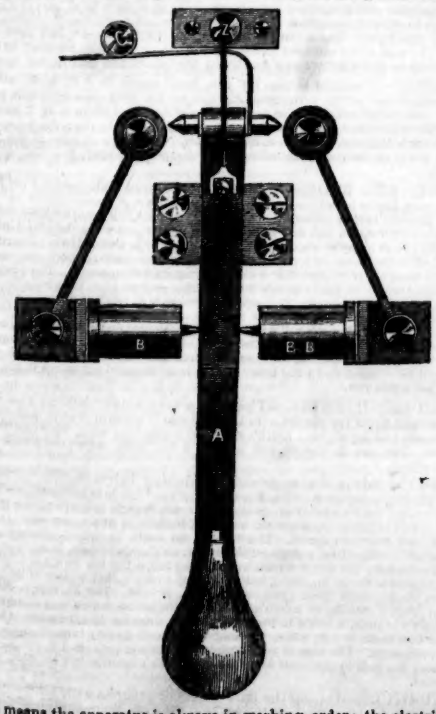
BY GEORGE LITTLE,
(OF THE FIRM OF BRETT AND LITTLE, ELECTRO-TELEGRAPHIC ENGINEERS, LONDON.)

"*Suum Cuique.*"

A, the magnetic bar, bent into a ring, or horse-shoe form, with the indicator attached to its dead part, and so made that it can be placed upon an axis—S, N, its south and north poles, so disposed as to command the whole magnetic influence of the current during its passage through the coils of wire upon the reel, B, represented by the dotted lines; two magnetic rings, with their indicators, and two coils of wire, of the size shown in the sketch, in addition to the pole changer, being all that constitutes the telegraphic instrument. The connection of the pole changer is as follows:—Z, is connected with the zinc end of the voltaic battery; C, to the copper; B, to one end of the coils of wire, the other end being in connection with the earth; B B, is connected to the line, or conducting wire (one only being used to work both indicators), and thence on to the distant station. The pole changer shown performs two very important offices—viz., it not only enables the operator to turn or divert the electricity from one indicator to the other at pleasure, and thereby represent any letters, numerals, or words, but also leaves a passage through which the electric current from a distance completes its circuit, by which means the recipient in communication can return a reply; this simple contrivance obviates much difficulty which would otherwise occur if a separate piece of mechanism was required for such purpose. The object is effected in this instrument by simply allowing the two points seen pressing against the lever A to remain in contact whilst waiting for a reply. The act of moving the lever, A, to the left will cause the current to flow through the wire, C, thence in the direction of the arrows through all the wire upon the reel, giving the whole surface of the reel, or coils, of wire a south polarity, which, combining with the magnetic curves of the north pole of the ring, or horse-shoe magnet, A, mutually attract each other, whilst, at the same time, the south pole of A is being repelled; this will have the effect of causing the indicator to strike and rest against the glass stop represented by the dotted lines, D D; on moving the lever to the right, the course of the current will be reversed, then the flow will take place through the coils of wire in a contrary direction, which will have the effect of causing the other ring, or horse-shoe magnet, to be acted upon—at the same time keeping the one shown in the diagram at rest by means of the indicator against the glass pin, D, because the surface of the reel, B, has now assumed a north polarity. Between the two indicators is placed the alphabet, shown in the accompanying diagram, the arrangement of which is such that any letter is shown by the transposition of numerals, which cannot fail to be understood—no cross-counting being admitted in any way; neither are the indicators allowed to cross their vertical point. Thus, on the left-hand indicator being held against its stop once, the figure 1 would be designated, and which would mean the letter A, because its position is on the same side of the dial as the indicator which moved; if it had been the right-hand indicator moved, then it would have denoted N; if, on the other hand, the letter S is wanted, nothing more is necessary than to give the numerals, 2 and 1, by moving the lever, A, twice to the left first, then once to the right; in fact, it will be seen, that, with a very little practice, any person that can read would readily understand the arrangement; at the end of a word, the left-hand indicator is held a moment against the stop, which would mean understand; if the recipient does understand, he will cause the same indicator to move over; but if he does not, and wishes the word to be repeated, he will cause the right-hand indicator to move. Private codes of signals are sometimes arranged between any two or more parties understanding each other, in which each letter of the alphabet represents many words: thus, "Send up a pilot-engine," would be represented by the letter B; "Let down train proceed cautiously, as an engine is off the rails at ——," would be signified by the letter C, and so on. By this we see that a simple telegraph adds very much to the safe conveyance of passengers by railway. The alarum, or bell, in connection whereby attention is, in the first place, called to the telegraph, differs very much from the old method, inasmuch as the electro-magnets are entirely dispensed with—a coil of wire and ring, or horse-shoe magnet, being substituted instead; by this means the apparatus is always in working order; the electric current, on passing through the coils of wire, acts upon the ring, or horse-shoe magnet, in a somewhat similar manner to what it does in the telegraph, with the exception that, in this case the magnets, in their motion, detach a connecting-rod from a catch upon the circumference of a wheel, and which is kept at rest by a spring, when not in action, but which is capable of being set in action by the voltaic current in any desired position. The wire used upon the reels for such purpose being extremely small, nearly as fine as the human hair, which is covered with silk, so as to prevent one part from coming into contact or touching another. At the same time, to insure a considerable quantity—say, 180 yards or so—being coiled into a very small compass; now, such a coil offers great resistance to a current of electricity, when sent from a battery at a great distance from it—the wire being too small to allow the current much power of exertion upon its atoms—consequently, a greater accumulation of its magnetic power is the result when a battery of low power is employed; but if a coil of wire be used of much larger size for such purpose, it would require a more powerful battery to produce the same effect at the same distance. Hence, by this contrivance, and taking advantage of the resistance offered to the power of the electric current, by causing it to pass through, or be brought into connection with a smaller body, the same voltaic battery will work an instrument through a distance of 1000 miles, which it previously took to work an instrument only 5 miles. It is highly necessary that the conducting wires between each station be as perfectly insulated as possible, otherwise there will be a great loss of battery power. It is far preferable, in all cases, to bury the wires for such purpose in the earth, at a depth of from 2 to 3 feet; by so doing, it is kept beyond the reach of depredators, and the influence of lightning being also entirely avoided at the same time. The process of making the conductors for this purpose is somewhat interesting, and is as follows:—The copper wire, about 1-10th of an inch thick, and of whatever length it may be, is first coated with cotton, by being wound upon the same; after which a coating of India rubber is applied, then another covering of cotton is wove upon it in a longitudinal direction; after this it is passed through a hollow shaft of iron or steel, in the centre of an hydraulic ram, which contains a quantity of lead in a half molten state, which surrounds the iron or steel shaft—an annular opening being left at the lower part of the same, so that when a great pressure is applied by means of the pumps, the lead is forced through the annular opening at the lower end of the shaft, and surrounding the insulated wire, which projects through the middle of the shaft, carrys the same on with the then forming leaden tube, which generally comes out of the machine from 200 to 300 yards in length; indeed, there is nothing to prevent such tube from being made 20 miles in length, if required, and that without a seam or join, as every fresh charge of lead blends with the old by pressure only; the conductor, as it leaves the ram, is coiled upon wooden drums, ready for transport to any line of railway where it may be required for use.



A	1		N
B	2		O
C	3		P
D	4		Q
E	1	1	R
F	1	2	S
G	1	3	T
H	2	1	U
I	2	2	V
J	2	3	W
K	3	1	X
L	3	2	Y
M	4	1	Z



The conducting wires made thus are most beautifully perfect, and it is my belief that those kind of electric conductors, when buried in a secure place, will undergo no change sufficient to impair their qualities for, at least, a century. For submarine purposes it is also admirably adapted, and I have ascertained for a fact, that it is far preferable to use one conducting wire and the earth, than two conducting wires without the earth. It will also take less power to work an electric telegraph where the earth is employed to complete the circuit. A very curious illustration of the conducting power of the earth will be, to take from it, in an earthenware vessel, a portion of its soil, and place the same upon a table, then complete the electric circuit through it; the resistance this offers whilst separated from the earth is astonishing; in fact, the instrument will hardly work, and sometimes not at all. But if the soil be again brought in connection with the electro-motive power of the earth, still making it the means for completing the circuit, the instrument will immediately work beautifully—much better than through an entire metallic conductor. Besides, in point of economy, the before-named method of burying the conducting wires is much less expensive than the old system of fixing the iron wires upon posts, which has many disadvantages, not to speak of the mischievous pranks which are sometimes played, such as twisting the wires together, which frequently has taken place in England; waggons running off the rails, and knocking down the posts, thereby stopping communications from being passed for a time, &c. Sometimes the stretched wire breaks of itself, because, in my opinion, its structure is injured, owing to the frequent disturbance its atoms meet with through the constant changing of the electric current during the time of operating upon the instruments, thereby making it more liable to fracture. Certain it is, that if an electric current be passed through an iron wire in one direction, thereby producing an effect, the same effect precisely will not be produced by passing the current through it in another direction—that is, not immediately, nor until the atoms have time to resume a state suitable for the purpose; and the harder the iron, the longer will it take. But, nevertheless, this disturbance will ultimately make the wire hard, if it is not so. The before-named effect can be proved by taking an electro magnet, and, passing a current through it, try its lifting power; then, by suddenly reversing the poles of the battery in connexion, it will sustain nothing like the former weight—as though the atoms, after having been put into motion in one direction, are not so easily turned in another; therefore, the longer the conducting wire, the longer will the atoms be in regaining their equilibrium—every atom having, no doubt, to press its fellow-atom onward, to regain that state. Perhaps the following experiment will be a curious illustration of this fact, that the atoms are actually in motion during the passage of the electric fluid:—Take a rod of iron, about two feet long by half an inch in thickness, and support it by its ends on two uprights, on a sounding board; secure the wires of a voltaic battery to each end, and lead them to the battery at a distance; by applying the ear close to one end of the bar of iron, whilst connection is being made and broken with the battery by an assistant, a very distinct sound will be produced in the iron, somewhat more musical than the ticking of a Dutch clock—the result of the molecules striking against each other. The sound will be nothing like so distinct when copper is used, thereby proving the superiority of copper conducting wires over those of iron, as not being liable to be rendered so brittle. Besides, a copper wire of one-third the size will not offer the same resistance to the current.

Another reason for burying the conducting wires of electric telegraphs, is that the Aurora Borealis has a great effect upon the instruments which are in the circuit of conducting wires suspended upon posts, the Aurora Borealis being a powerful source of magnetism. Dr. Dalton, in a work published in 1793, tells us that the region of the Aurora is 150 miles above the earth's surface, and that the beams of the Aurora are themselves magnetic, and are governed by the earth's magnetism. Hence it follows that the iron conducting wires upon the posts being a nearer and better conductor between the earth and it, that medium of affinity is, therefore, preferred, and the result is that the molecules of the iron being put into such a violent state of commotion as to defy the operator to pass any communications at the time.

The Patent Electro-Telegraphic Converser of Messrs. Brett and Little has been erected upon the following railways—viz.: the North-Western, the Leeds and Thirsk, the Whitehaven Junction, and Chester and Birkenhead in England, as also upon the Great Southern and Western Railway, in Ireland.*

RAILROADS IN PRUSSIA.—A summary of the report presented to the High Court by the Prussian Minister of Finance, shows that 29 railway schemes were sanctioned between 1837 and 1847. Of that number 21 are completed, and four are partly finished. These 29 railroads require a capital of 241,000,000f. The 21 already completed cost 125,000,000f.; the six unfinished ones, 20,000,000f.—total, 145,000,000f. The Government hope to be able to meet the expenses of the railroads with its ordinary resources; if this hope should not be realized, the Government requests permission from the High Court to contract a loan of from $3,000,000 to $4,000,000.

NEW ROTARY ENGINE.—Several trials took place, last week, on the Thames, in the neighbourhood of Taplow, of a new rotary engine, the invention of Capt. W. E. Fitzmaurice, late of the 2d Life Guards, and his brother-in-law, Mr. Harford. It was fitted up in a frigate's pinnace, 10 tons burden, carrying 5½ tons, and though calculated at 10-horse power, occupied only 21 by 7 inches. The boat is 32 feet long and 8 feet broad in the beam, and though intended to mount carronades and carry men, was not fitted for speed; she is propelled by a screw, 3 ft. diameter, worked by the engine, which made 200 revolutions per minute, and the boat made 2 miles in 20 minutes, or 8 miles per hour. It is stated that the working parts of the engine are most simple, consisting only of two pieces, which work with the greatest ease, are free from any dead points, and without the slightest vibration, however high the velocity. There are no springs or packing, and the motion being a rolling one, there is little friction, and the works last a great length of time without repair. It weighs less than 1 cwt. per horse power, and requires much less fuel than other engines. Capt. Fitzmaurice gives the invention freely to the public.—On Thursday last, Capt. W. H. Stewart, and Mr. F. P. Smith, of the screw-propeller department at the Admiralty, proceeded to Taplow to satisfy themselves how far the report of the perfection of Capt. Fitzmaurice's rotary engine was correctly stated, and, although the rain poured in torrents during a greater part of the time the experiments were carried on, they admitted the result to be very satisfactory. Not anticipating any visitors on such a day, the pieces which had been detached since the previous experiment were hastily put together, and the steam got up, and the boat started against the stream with seven persons on board. The rains had increased the depth of the river nearly 2 ft. since the previous trial, and made the navigation less difficult. The boat started in fine style, and on Mr. Smith timing the revolutions of the screw, he found them to be 192 per minute, and that may be considered the average speed on this occasion, with a very little exception, when the screw got entangled in weeds, which were soon removed when found adhering, by a few back turns of the screw. The distance run out and back was about 26 miles, and once through the lock of a canal, for which species of navigation it appears to be admirably adapted, having shown on a previous occasion its capabilities for towing by drawing a broad-bowed and flat-bottomed barge, 30 feet long by 12 ft. in breadth, at the rate of three miles an hour against the stream. The speed attained by the boat on this occasion was ascertained by Mr. Smith and Capt. Houston Stewart to be fully seven knots per hour, or 8·055 statute miles an hour, a remarkable result, considering that the boat was in no way constructed for speed. The ease with which the engine could be set in motion, and stopped or graduated to any degree of velocity up to its full speed, was a subject of surprise to the visitors, and the rough manner in which it was used to show its instantaneous effect, and difficulty to put it out of working order, could not be credited unless they were witnessed. The absence of vibration in the engine, and the uniform continuous motion, satisfied the visitors that Capt. Fitzmaurice had overcome the difficulties which eminent engineers have always considered it difficult to obviate in rotary engines, and they left on their return to town, much gratified with the result of all they had witnessed, and pleased with the minute details he entered into, when showing the model, and explaining the principle on which the two pieces of which it consists work the one within the other.

* In the foregoing remarks, the electric fluid is spoken of as passing through, &c.; not that it does flow through, but because it is the most familiar term.

BIRAM'S PATENT MINERS' LAMP.

Fig. 1.

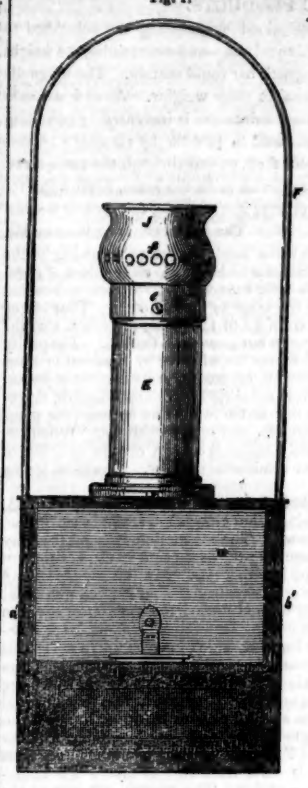


Fig. 2.

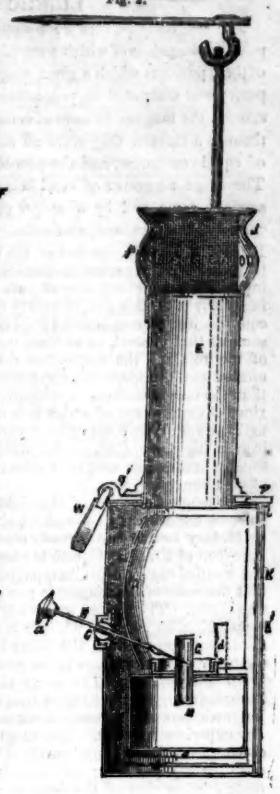


Fig. 3.

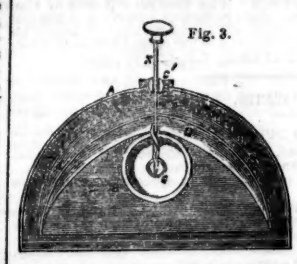
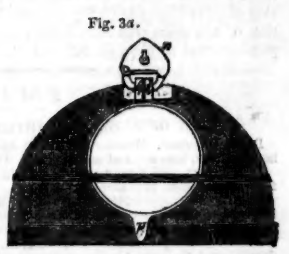


Fig. 3a.



Mr. Biram's invention has for its object to increase the light obtainable from those miners' lamps which are constructed on the principle of what is called "the Davy Lamp," and to afford better protection to the flame from currents of air. These several improvements are accomplished by constructing such lamps in the manner of the one represented in the annexed engravings. Fig. 1, is an external elevation of this lamp in its complete state: fig. 2, a side elevation of it partly in section; fig. 3, a plan on the line $a^1 b^1$; and fig. 3 a, a top plan. A is the external case, which is of the ordinary semicircular form, and suspended by a curved handle, F; B is the oil reservoir and wick-holder; this reservoir is slid in the casing, on grooved or mutually overlapping pieces, *a b*, one of which is affixed to the bottom of the case, and the other to the bottom of the reservoir; and *c* is a ring, by which the reservoir, B, is pushed into its place or drawn out when required to be replenished. C is the burner, with circular tube and wick, as usual; D is a metallic reflector of a parabolic or other suitable curvature, which is mounted behind the burner on two pins, *d d*, which rise from the top of the reservoir, B, and take into two short tubes soldered to the back of the reflector. E is a chimney, which rises from the top of the case (A), and may be made either wholly of metal or principally of wire gauze (like the common Davy lamp). If made of metal, it is surmounted by a cap, J, which is closed at top, but perforated in the sides by a circle of holes or slits, *f f*, which are protected within by a screen of wire gauze, *g* (see fig. 2); *e* is a screw, by which the cap, J, is made fast to the chimney, but which can be undone in order to allow the cap to be removed when it is necessary to examine, clean, or renew the wire gauze; K is the door, which drops into grooves made for it in the front edges of the case, and consists of a metal frame divided into two compartments; the upper and larger of which, *m*, being that in front of the light, is filled with talc, and the lower and smaller, *n*, is fitted with a portion of wire gauze, through which (alone) the air necessary to support the flame is supplied. The frame may be made a little narrower towards the bottom than at top, in order that it may the more easily be dropped into or raised out of its place; but when it has been once fixed in its place, care should be taken that it fits accurately throughout, and especially that the top flange, *l*, is brought close down over the grooves in which the door slides. P is a ring, which turns in a seat made for it on the outside of and close to the bottom of the chimney, E; *p*, is a pin which projects from the ring, P, and passing over the top of the door, K, secures it in its place; q^1 is an eye-piece, which is attached to the back of the ring, P, and is in the same diametrical line with the pin, *p*; and q^2 a companion eye-piece, which is affixed to the top of the case, A, and against which the other eye-piece abuts, when the pin, *p*, is moved round into a central position over the door, K.

When the two eye-pieces are brought side by side, the hasp of a small padlock, W, is passed through them, and the interior of the lamp thus perfectly secured against all meddling or intrusion; C (fig. 2) is a ball and socket, or universal joint, fixed in the back of the case, A; and R a pricker for raising, depressing, or trimming the wick, which is passed through the ball and through a corresponding opening in the focus of the reflector, D. The picker is free to move to and fro through the ball, but within certain limits, determined by a twist which is given to it at the inner end, to prevent its being entirely drawn out; and it has thus the power of universal movement, not in one plane only, but in as many different planes as come within the range of its to-and-fro movement through the ball. The lamp when in use may be suspended from a steel spike, driven into the coal or into a wooden prop, and this spike may have a swivel hook at the top, by which it may not only be attached for convenience of carriage to the handle, F, of the lamp, but be readily turned round from one position into another. When this lamp is taken into an inflammable atmosphere, the noxious gas which passes through the under or gauze compartment of the door ignites and burns within, with a slight blue flame, and very soon absorbs the supply of oxygen to the lamp and extinguishes the flame (unless the lamp is removed into fresh air), but with no other inconvenience to the bearer than the loss of his light.

To enable a person to work in a part of a mine charged with carburetted hydrogen (which may sometimes be necessary for a short time), a circular opening, protected by wire gauze, may be substituted for the under compartment, *n*, as indicated by the dotted lines, *t t* (fig. 1), and a tube of vulcanised India-rubber or other flexible material fitted to this circular opening; which tube may be of any length required to reach into the pure air. The lamp would then burn freely and securely for any length of time, being supported with pure air; although the workman himself might, it is true, be exposed to danger from breathing air deleterious to health, or even destructive of life. Instead of the door being made in two compartments, one filled with talc and the other with wire gauze, it may be made with a single opening by substituting wire gauze for the talc. Probably for viewers or overmen, the talc may be preferred, and for working miners, the wire gauze. The patentee has ascertained by numerous experiments that the light emitted through clear talc is rather more than that of four candles, and the light emitted through the wire gauze (in a lamp of this improved description) is about equal to that of an ordinary pit candle.—From the *Mechanics' Magazine.*

MANUFACTURE OF GLASS.

[Patent granted to Obed Blake, of the Thames Plate Glass Company, Blackwall, Middlesex, manager, for certain improvements in the process or processes of manufacturing and finishing plates, sheets, or panes of glass.]

Before describing his invention, the patentee states that the processes already in use for the purpose of finishing plates, sheets, or panes of glass, consist in grinding and smoothing plate glass, by cementing with plaster of paris, upon a fixed horizontal bed, one or more plates, other plates of glass being cemented upon the lower face or runner, which is traversed by an eccentric motion over the plates of glass; upon the lower bed sand and water are thrown, and the eccentric motion is continued until the plates of glass are ground flat, and as nearly smooth as can be conveniently attained by this process, finer emeries being used as the work progresses; but these grinding machines do not admit of being employed with very fine emery, and the plates of glass are, therefore, smoothed by hand, as follows:—A horizontal bed or table of stone, made quite flat, is covered with wet canvas, and a plate of glass is laid upon it; fine emery, moistened with water, is then sprinkled over the surface of the glass, and another plate of glass, called a runner, is laid upon the lower plate, and traversed by hand over it, with a swinging stroke backwards and forwards, so as to describe about the third of a circle around the centre of the runner, which is at the same time shifted a few inches both transversly and longitudinally during the stroke; every stroke thus follows a slightly different path from the preceding one, and the runner is also occasionally twisted round; as the smoothing proceeds, the adhesion of the hand placed flat upon the runner is found to be sufficient to traverse the runner over the lower plate.

The present invention is intended to perform the smoothing process by machinery, in the same general manner as it is now effected by hand. Instead of employing cement, or the adhesion of the human hand, for holding the glass, it is proposed to employ the adhesion produced by a vacuum. For this purpose, a hollow vessel, which may be called a vacuum block, is employed. Several plates may be connected together to constitute one runner, employed in machinery for smoothing glass. The runner is capable of three horizontal motions, independent of each other, as simple motions, or connected together, to produce a compound motion similar to hand work.

We omit the description of the mechanical details of this invention, as they would be unintelligible without the drawings.

Claim.—Having described the nature of the invention, and the manner the same is to be performed, the patentee then states that he desires it to be distinctly understood that he does not claim the exclusive use of any of the seperate parts above mentioned and referred to, except in so far as the same may be employed for the purposes of the said invention; neither does he confine himself to the precise details of the means or apparatus set forth and described (as such details will necessarily vary), so long as the peculiar character of the invention is retained. But what he claims as of his invention is the mode or modes of smoothing plates, sheets, or panes of glass, by means of suction or vacuum blocks, arranged in combination with runners and other machinery as set forth and described, and illustrated by the drawings annexed to the specification.

FRANKLIN COXWORTHY'S DISCOVERIES IN NATURAL PHILOSOPHY.—No. VI.

We venture to assume that we have successfully disposed of the several gases evolved from the atmosphere, and from the vegetable kingdom, under the respective influences of combustion, respiration, and the decay of vegetable matter; and, in order to complete the investigation, we have now to account for their restoration to the grand reservoirs from which they were originally liberated. This task, it is pleasant to say, is not difficult to perform; and, in its discharge we shall have the gratification of affording to our readers a beautiful illustration of the simple, yet ever efficient, manner in which Nature accomplishes her purpose. The more easily to do this, we must take into consideration another of Franklin Coxworthy's propositions, which, like the two previously given, we place in juxta-position with the doctrine antecedently received.

OLD DOCTRINE.	NEW DOCTRINE.
That the atmosphere is a mechanical mixture, the elements being held together by diffusion.	That the atmosphere is a chemical compound, *originally formed, and now regenerated, by vegetation.*

Ammonia, as we have already demonstrated, is contained in great quantities both in snow-water and rain. We have also shown that the combustion of 35,000,000 tons of coal, or carbon, the quantity consumed in this country alone, must yield no less than 130,000,000 tons of carbonic acid, since carbon combines with oxygen in the proportion of 27 to 73; and that, as carbonic acid has a specific gravity of 1·5, it must have a gravitating influence immediately that it acquires a preponderance by contact with the air, and will, therefore, redescend to the globe's surface and combine with water, in which it is highly soluble. The fluid, then, that presents itself to the roots of plants, contains—

Ammonia	Hydrogen Nitrogen	Hydrogen. Air.
Carbonic acid....	Oxygen Carbon	Carbon.
Water	Oxygen Hydrogen	Oxygen. Hydrogen.

And we know that the non-nitrogenous portion of the vegetable kingdom, abstracts from the sap, or assimilates, hydrogen, carbon, and oxygen, but not nitrogen. The last named gas, generally speaking, being a constituent of seeds only; and cannot, therefore, form a part of the description of plants to which we have alluded, and of which the forest tree may be cited as a familiar example. As far as actual demonstration by extensive experiments might be carried, it is unfortunate that it cannot be added to the inductive reasoning of Franklin Coxworthy, in this branch of his discoveries, for want of time and means, both of which, in these days of professed liberality in scientific matters, ought to be placed amply at his disposal. Evidence in its favour, however, is not wanting to sustain his theory. If it is not acknowledged that air is generated by plants—which he maintains to be the case—it is admitted that they yield vast quantities of oxygen, and we know that they possess no smell to indicate the escape of undecomposed ammonia. And as much electricity, the now recognised agent in nature, is set free by vegetation, we must, in the absence of any evidence to the contrary, assent to the probable correctness of his conclusions on this important branch of natural philosophy—that, in fact, a portion of the oxygen disengaged by the tree from carbonic acid and water, under the highly electrical influence of the plant, combines, chemically, with the nitrogen of the ammonia in the re-formation of air. Surely this is a subject worthy of the attention of the philosopher? It is easy of investigation with proper appliances. There is no absurdity involved in it. On the contrary, its proper elucidation may be the means of confering great benefits to mankind. And, as the chemical section of the British Association is now engaged in ascertaining the correctness of two of Franklin Coxworthy's propositions—the growth of plants in an atmosphere of carbonic acid, and the "breathing" functions of the animals of the carboniferous period—we strongly recommend such an extension of research as shall comprise the three scarcely separable investigations.—S: *Cheltenham Journal.*

ALLEGED DISCOVERY IN VENTILATION.—In the last number of the *Literary Gazette* there are some observations on an alleged discovery, by Dr. Chowne, of a property in the syphon for the ventilation of mines, ships, buildings, &c., which had never before been discovered, and for which he has enrolled a patent. The writer states, "that the improvements are based upon an action in the syphon which had not previously attracted the notice of any experimentor—viz.: that if fixed with legs of unequal length, the air rushes into the shorter leg, and circulates up, and discharges itself from the longer leg." Now, without having any description of Dr. Chowne's invention before us, and, of course, not being able to form any opinion of its merits, we cannot subscribe to the assertion that this property of the syphon was never before noticed. It is the great principal of ventilation in most cases adopted naturally; what is the downcast shaft of a mine but the short leg of a syphon when the upcast has a chimney to render it the longer leg? All house ventilation proceeds on the same principle; every room open to currents of air from doors and windows becomes the short, and the chimney the long, leg of the syphon, through which the deteriorated air and gases ascend. We shall, however, endeavour to ascertain the mechanical arrangement of the patent, and most heartily shall we acknowledge its merits, if really an improvement.

THE WINDSOR RAILWAYS.—The struggle between the Great-Western and South-Western railways as to which shall first complete a railway into Windsor is likely to terminate in favour of the former, arising from the unforeseen accident of the sinking of the bridge at Blackpotts on the latter, and which it is expected will have to be rebuilt. Meanwhile, both companies are making rapid clearances for their stations in Windsor. The houses purchased by the Great-Western for their station in George-street are being sold and pulled down, while the occupiers of those in Datchet-lane have received notices from the South-Western for a similar purpose.

MINING IN THE OLDEN TIMES—No. I.

Although it has often been urged that mines were wrought in England previous to its conquest by the Romans, the most received opinion is, that the art of mining was first introduced by those people. Their descendants are said to have settled themselves, partly in the high Peak of Derbyshire, some few about the Forest of Dean, and others in Cornwall, all of which governed themselves by the Gallic and Roman laws in force amongst them, separate from all other subjects of Great Britain, deciding all differences in their own courts by ancient laws and customs. Owing to civil dissensions in the time of the Saxons, and the disturbed state of the country for the first century of the Norman dynasty, but little notice was taken of them until the sixteenth year of King Edward I., who caused a writ of inquiry to be executed, bearing date the 28th day of April, attested by his cousin, Edmond, Earl of Derby; at the return of these writs the inquisition of which was held at Ashbourn before Reynold of the Ley and William of Memil, the king suffered the lead miners to enjoy the ancient privileges of their own laws and their mines, until his will and pleasure was further known; as this was the first writ issued, a copy from the original in the rolls of the Exchequer may not be uninteresting: "Edward, by the Grace of God, King of England, Lord of Ireland, and Duke of Acquitain, to the sheriff of the county of Derby, greeting, knowe ye that we have assigned our faithful and well-beloved Reynold of the Ley, and William of Memil, to inquire by the oaths of good and lawful men of your country, by the which the truth may be best known, of the liberty which our miners do claim to have in those parts, and which they have hitherto used to have, and by what means and how, and from what time, and by what warrant; and, therefore, we do command that at a certain day and place, which the said Reynold and William shall appoint thee, thou shalt cause to come before them so many and such good and lawful men of thy bailwick, by the which may there the best be known in the premisses by the inquiry, and that thou have there thy writt." The same king gave the tinners some new laws, and called them Court Parliament of Stannaries; by this he freed them from all pleas of the natives touching the courts, and from answering before any justices, save only the keeper of the Stannaries (plea of land, life, and member excepted). Neither are they to be kept from work but by the said keeper, and idemnifies them from tolls, gives them liberty to dig tin and turf anywhere in the said county, and to turn water-courses for their works at pleasure, with many other privileges, both to the keeper and tinners, concerning weighing and selling their tin. In this reign the mines of Combmartin, in Devonshire, were worked; in the 22d year of his reign, William Wymundham accounts for 270 lbs. weight of silver; it was forged for Eleanor, Duchess of Bar, daughter to the king, married the year before; in the 23d year 520 lbs. weight, and in the 24th year 704 lbs. weight, were fined in wedges from the same mine. The troubles that occurred in the reign of his successor Edward caused the mines to be much neglected. In the 15th year of Edward III., letters patent were issued, granting to his brother John of Eltham, Henry Earl of Northumberland, and others, the copper mines of Skildane, in Northumberland, and the copper mine of Alston Moor, in Cumberland, and the copper mine near Richmond, in Yorkshire, to hold for 15 years, paying to the king the eighth part net, and to the lord of the soil the ninth, as they arise. The same king, in his 18th year, by his letters patent, granted to William Goderswick all mines of copper and lead in Northumberland and Westmoreland (not granted before) for 10 years, paying to the king a fifteenth part of the net, and to the lord of the soil as they can agree. In the 32d year of his reign he granted unto John Ballenter and Walter Belboter, all his mines of gold, silver, and copper in the county of Devon for two years, with liberty to dig and search (except in gardens), yielding 20 marks the first year, and the fifth part the second year, and all other persons are excluded from digging there. Among the remembrances of the Exchequer is one to John Jugg and Henry of Wisbeach, which states, that being informed that certain mines of lead, mixed with gold and lead ore, are found in the county of Salop, he wills that the Barons of the Exchequer and the Treasurer may be certified of the manner of finding the said mines, and whether any hath been transported, and by whom, and empowers them to inquire upon oath, and commands them to certifie his treasurer and barons thereof. Richard II., in the eighth year of his reign, by letters patent dated the 11th of June, granted to Richard Wake, clerk, his mines of gold and silver in the county of Devon, and liberty to dig (paying damage to the owner of the grounds), as well within the liberties as without, for 10 years, paying a tenth part of the profit into Holy Church, and to the Exchequer the ninth part, and all other persons to be excluded. In the 4th of June, in the 17th year of the same reign, we find a precept to Hugh of Burnell and the sheriff of Shropshire; in this it recites, that "we are informed by James Miner, of a mine of copper or silver, in or near the lordship, or priory, of Wenlock, whereout no little profit would accrue to us, if wrought by experienced workmen; we assign you to ordain the said James to work the same without any lett, he not doing anything against the laws of our kingdom, or demolishing any houses or gardens. Henry IV., the 11th of May, in the second year of his reign, commands Walter Fitzwalter, upon information of a concealed mine of gold in Essex, to apprehend all such persons, as he in his judgment thinks fit, that do conceal the said mine, and to bring them before the king and his council, there to receive what shall be thought fit to be ordered. It seems that about this period the art of transmutation was practised to a great degree. In this reign flourished Sir George Ripley, the famous alchemist, who, it is said, gave yearly to the Knights of Rhodes 100,000*l.* towards maintaining the wars they were constantly waging to preserve the last seat of eastern Christendom from the Turks. A great many persons in this and the preceding reign had spent their estates, and ruined themselves and their families in attempting this chimerical art, which is thus characterised by one of the monkish writers of the day—"*Ars sine arte, cujus principium est mentire, medium laborare et finis mendicare.*" In order to prevent the ruin of unwary persons, and fearful that any subject possessing the art of multiplication of metals would be able to engross too great a share of sovereign power, probably to the detriment of the Crown and kingdom, and subversive of all established relations, the Parliament, in the fifth year of this king's reign, passed an Act in these words—"It is ordained and established, that none from henceforth shall use to multiply gold or silver, or use the craft of multiplication, and if any the same do, that he incur the penalty of felony in this case." Notwithstanding this Act, his grandson, Henry VI., being impoverished by the wars of France, granted a patent to Sir Edmund Trafford and Sir Thomas Ashton, of Lancashire—"*Metalla imperfecta de suo proprio genere transferre et per artem in aurum, sive argentum perfectum transubstantiare ad omnimodos probationes et examinationes, sicut aliquid aurum, sive argentum in aliqua minera crescens.*" The same king, in the 34th year of his reign, by the advice of his Council and Parliament, grants four successive patents and commissions to several knights, citizens of London, chemists, and monks (with a *non obstante* to the law of Henry IV.), to find out the philosopher's stone or elixir, that would transubstantiate other metals into most true and solid gold and silver. In his 25th year he granted new letters patent to 10 persons of eminent quality, therein mentioned, to judge and certify to him whether the thing were practicable or no, and whether it would conduce more to the hurt or good of the kingdom. No one was prosecuted upon this statute till the 7th of Edward VI., when a man of the name of Eden confessed himself guilty of multiplication—viz., that he had practised to make the fifth essence, whereby all metals may be made gold or silver; at the same time he accused a prisoner, of the name of Whalley, in the Tower, that he moved and procured him to practise that art. But a general pardon being passed at that time, in which felony was included, Eden escaped, though Whalley, as accessary to the felony, did not, being one of those who were in the Tower, and excepted from pardon. The statute against the multiplying of gold and silver was repealed the first year of William and Mary, in order to encourage persons to extract the more precious from the baser metals, which, precious to the repeal of the Act, they were afraid to perform, fearful of falling under the penalty. In the 7th year of Henry IV., he granted to Henry and John Darby all the lead mines holding silver in the county of Devon for ten years, on condition of paying to him 9 lbs. of pure silver yearly, and to all others their dues; William Charlton, the prior of Pilton, is appointed receiver and comptroller. No records appear to have been issued during the short but glorious reign of his successor, Henry V. During the long and troublesome period of his son, Henry VI., several warrants were issued: the first of which we have notice, is dated the 24th February, the fifth year of his reign; in this he grants to John Duke of Bedford, Regent of France and Protector of England, all mines of gold and silver, within the kingdom of England for 10 years, paying the tenth part to Holy Church, to the king the fifteenth, and to the lord of the soil the twentieth part to dig, but not under houses, in arable land, or meadow, without license of the lord of the soil, and to make reasonable amends for any damage. On the 11th of July, the 17th year of his reign, he grants to John Sellers all mines of gold and silver in Devon and Cornwall, and all mines of lead holding silver or gold, to hold from the expiration of 12 years, formerly granted to the Duke of Bedford for 20 years, paying the fifteenth part of pure gold and silver, but not to dig under any houses or castles; a clause is inserted to provide for wood and labourers. On the 10th of September, 30th of anno regni, he makes his chaplain, John Bottwright, comptroller of all his mines of gold and silver, copper, latten, and lead, within these two counties. On the 20th June the year following, the same John Bottwright is nominated provost and governor of all his mines; by this deed all mines of copper, tin, and lead, whereout any gold or silver shall be fined, to hold during his good behaviour, paying the tenth part of pure gold and silver, copper, tin, and lead, to be fined at his own charge, with power to let and set for 12 years, paying to the king the tenth bowl of ore of copper, tin, and lead, holding gold or silver, and to dig without interruption, the fee of the church excepted.

[*To be continued in next week's Mining Journal.*]

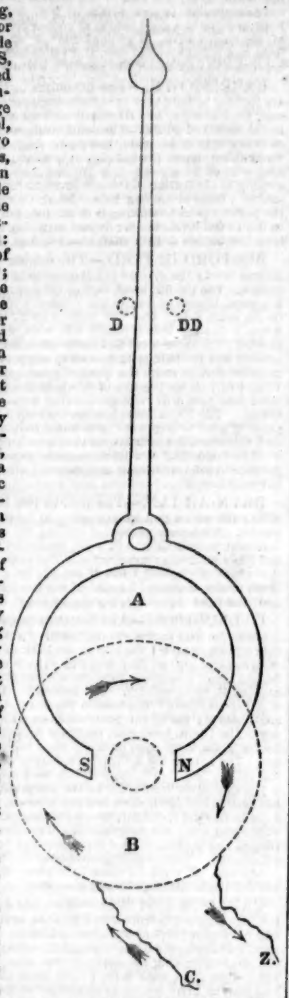
SUNDERLAND DOCK.—We understand that the owners of the Hetton Colliery have arranged with the directors of the Sunderland Dock to ship the whole of their coals at that place, and to abandon their present railway when the dock is fully opened; they will then bring all their coals down the Durham and Sunderland Railway.—*Sunderland Herald.*

A FEW REMARKABLE FACTS ABOUT ELECTRICITY AND ELECTRIC TELEGRAPHS.—No. V.

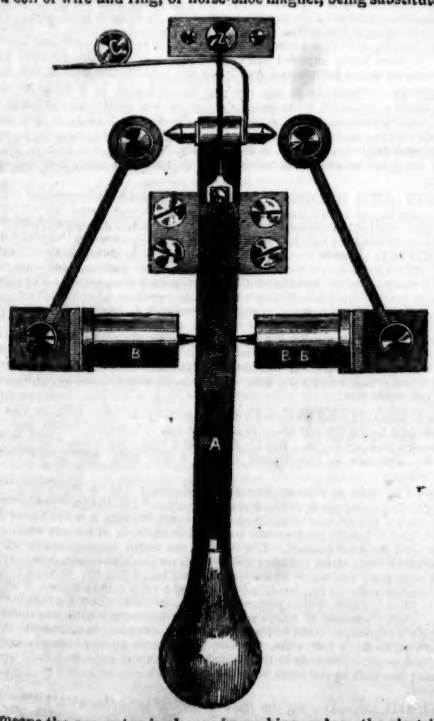
BY GEORGE LITTLE,
(OF THE FIRM OF BRETT AND LITTLE, ELECTRO-TELEGRAPHIC ENGINEERS, LONDON.)

"Suum Cuique."

A, the magnetic bar, bent into a ring, or horse-shoe form, with the indicator attached to its dead part, and so made that it can be placed upon an axis—S, N, its south and north poles, so disposed as to command the whole magnetic influence of the current during its passage through the coils of wire upon the reel, B, represented by the dotted lines; two magnetic rings, with their indicators, and two coils of wire, of the size shown in the sketch, in addition to the pole changer, being all that constitutes the telegraphic instrument. The connection of the pole changer is as follows:—Z, is connected with the zinc end of the voltaic battery; C, to the copper; B, to one end of the coils of wire, the other end being in connection with the earth; B B, is connected to the line, or conducting wire (one only being used to work both indicators), and thence on to the distant station. The pole changer shown performs two very important offices—viz., it not only enables the operator to turn or divert the electricity from one indicator to the other at pleasure, and thereby represent any letters, numerals, or words, but also leaves a passage through which the electric current from a distance completes its circuit, by which means the recipient in communication can return a reply; this simple contrivance obviates much difficulty which would otherwise occur if a separate piece of mechanism was required for such purpose. The object is effected in this instrument by simply allowing the two points seen pressing against the lever A to remain in contact whilst waiting for a reply. The act of moving the lever, A, to the left will cause the current to flow through the wire, C, thence in the direction of the arrows through all the wire upon the reel, giving the whole surface of the reel, or coils, of wire a south polarity, which, combining with the magnetic curves of the north pole of the ring, or horse-shoe magnet, A, mutually attract each other, whilst, at the same time, the south pole of A is being repelled; this will have the effect of causing the indicator to strike and rest against the glass stop represented by the dotted lines, D D; on moving the lever to the right, the course of the current will be reversed, then the flow will take place through the coils of wire in a contrary direction, which will have the effect of causing the other ring, or horse-shoe magnet, to be acted upon—at the same time keeping the one shown in the diagram at rest by means of the indicator against the glass pin, D, because the surface of the reel, B, has now assumed a north polarity. Between the two indicators is placed the alphabet, shown in the accompanying diagram, the arrangement of which is such that any letter is shown by the transposition of numerals, which cannot fail to be understood—no cross-counting being admitted in any way; neither are the indicators allowed to cross their vertical point. Thus, on the left-hand indicator being held against its stop once, the figure 1 would be designated, and which would mean the letter A, because its position is on the same side of the dial as the indicator which moved; if it had been the right-hand indicator moved, then it would have denoted N; if, on the other hand, the letter S is wanted, nothing more is necessary than to give the numerals, 2 and 1, by moving the lever, A, twice to the left first, then once to the right; in fact, it will be seen, that, with a very little practice, any person that can read would readily understand the arrangement; at the end of a word, the left-hand indicator is held a moment against the stop, which would mean understand; if the recipient does understand, he will cause the same indicator to move over; but if he does not, and wishes the word to be repeated, he will cause the right-hand indicator to move. Private codes of signals are sometimes arranged between any two or more parties understanding each other, in which each letter of the alphabet represents many words: thus, "Send up a pilot-engine," would be represented by the letter B; "Let down train proceed cautiously, as an engine is off the rails at ——," would be signified by the letter C, and so on. By this we see that a simple telegraph adds very much to the safe conveyance of passengers by railway. The alarum, or bell, in connection whereby attention is, in the first place, called to the telegraph, differs very much from the old method, inasmuch as the electro-magnets are entirely dispensed with—a coil of wire and ring, or horse-shoe magnet, being substituted instead; by this means the apparatus is always in working order; the electric current, on passing through the coils of wire, acts upon the ring, or horse-shoe magnet, in a somewhat similar manner to what it does in the telegraph, with the exception that, in this case the magnets, in their motion, detach a connecting-rod from a catch upon the circumference of a wheel, and which is kept at rest by a spring, when not in action, but which is capable of being set in action by the voltaic current in any desired position. The wire used upon the reels for such purpose being extremely small, nearly as fine as the human hair, which is covered with silk, so as to prevent one part from coming into contact or touching another. At the same time, to insure a considerable quantity—say, 180 yards or so—being coiled into a very small compass; now, such a coil offers great resistance to a current of electricity, when sent from a battery at a great distance from it—the wire being too small to allow the current much power of exertion upon its atoms—consequently, a greater accumulation of its magnetic power is the result when a battery of *low* power is employed; but if a coil of wire be used of much larger size for such purpose, it would require a more powerful battery to produce the same effect at the same distance. Hence, by this contrivance, and taking advantage of the resistance offered to the power of the electric current, by causing it to pass through, or be brought into connection with a smaller body, the same voltaic battery will work an instrument through a distance of 1000 miles, which it previously took to work an instrument only 5 miles. It is highly necessary that the conducting wires between each station be as perfectly insulated as possible, otherwise there will be a great loss of battery power. It is far preferable, in all cases, to bury the wires for such purpose in the earth, at a depth of from 2 to 3 feet; by so doing, it is kept beyond the reach of depredators, and the influence of lightning being also entirely avoided at the same time. The process of making the conductors for this purpose is somewhat interesting, and is as follows:—The copper wire, about 1-10th of an inch thick, and of whatever length it may be, is first coated with cotton, by being wound upon the same; after which a coating of India rubber is applied, then another covering of cotton is wove upon it in a longitudinal direction; after this it is passed through a hollow shaft of iron or steel, in the centre of an hydraulic ram, which contains a quantity of lead in a half molten state, which surrounds the iron or steel shaft—an annular opening being left at the lower part of the same, so that when a great pressure is applied by means of the pumps, the lead is forced through the annular opening at the lower end of the shaft, and surrounding the insulated wire, which projects through the middle of the shaft, carrys the same on with the then forming leaden tube, which generally comes out of the machine from 200 to 300 yards in length; indeed, there is nothing to prevent such tube from being made 20 miles in length, if required, and that without a seam or join, as every fresh charge of lead blends with the old by pressure only; the conductor, as it leaves the ram, is coiled upon wooden drums, ready for transport to any line of railway where it may be required for use.



A	1		N
B	2		O
C	3		P
D	4		Qu
E	1	1	R
F	1	2	S
G	1	3	T
H	2	1	U
I	2	2	V
J	2	3	W
K	3	1	X
L	3	2	Y
M	4	1	Z



The conducting wires made thus are most beautifully perfect, and it is my belief that those kind of electric conductors, when buried in a secure place, will undergo no change sufficient to impair their qualities for, at least, a century. For submarine purposes it is also admirably adapted, and I have ascertained for a fact, that it is far preferable to use one conducting wire and the earth, than two conducting wires without the earth. It will also take less power to work an electric telegraph where the earth is employed to complete the circuit. A very curious illustration of the conducting power of the earth will be, to take from it, in an earthenware vessel, a portion of its soil, and place the same upon a table, then complete the electric circuit through it; the resistance this offers whilst separated from the earth is astonishing; in fact, the instrument will hardly work, and sometimes not at all. But if the soil be again brought in connection with the electro-motive power of the earth, still making it the means for completing the circuit, the instrument will immediately work beautifully—much better than through an entire metallic conductor. Besides, in point of economy, the before-named method of burying the conducting wires is much less expensive than the old system of fixing the iron wires upon posts, which has many disadvantages, not to speak of the mischievous pranks which are sometimes played, such as twisting the wires together, which frequently has taken place in England; waggons running off the rails, and knocking down the posts, thereby stopping communications from being passed for a time, &c. Sometimes the stretched wire breaks of itself, because, in my opinion, its structure is injured, owing to the frequent disturbance its atoms meet with through the constant changing of the electric current during the time of operating upon the instruments, thereby making it more liable to fracture. Certain it is, that if an electric current be passed through an iron wire in one direction, thereby producing an effect, the same effect precisely will not be produced by passing the current through it in another direction—that is, not immediately, nor until the atoms have time to resume a state suitable for the purpose; and the harder the iron, the longer will it take. But, nevertheless, this disturbance will ultimately make the wire hard, if it is not so. The before-named effect can be proved by taking an electro magnet, and, passing a current through it, try its lifting power; then, by suddenly reversing the poles of the battery in connexion, it will sustain nothing like the former weight—as though the atoms, after having been put into motion in one direction, are not so easily turned in another; therefore, the longer the conducting wire, the longer will the atoms be in regaining their equilibrium—every atom having, no doubt, to press its fellow-atom onward, to regain that state. Perhaps the following experiment will be a curious illustration of this fact, that the atoms are actually in motion during the passage of the electric fluid:—Take a rod of iron, about two feet long by half an inch in thickness, and support it by its ends on two uprights, on a sounding board; secure the wires of a voltaic battery to each end, and lead them to the battery at a distance; by applying the ear close to one end of the bar of iron, whilst connection is being made and broken with the battery by an assistant, a very distinct sound will be produced in the iron, somewhat more musical than the ticking of a Dutch clock—the result of the molecules striking against each other. The sound will be nothing like so distinct when copper is used, thereby proving the superiority of copper conducting wires over those of iron, as not being liable to be rendered so brittle. Besides, a copper wire of one-third the size will not offer the same resistance to the current.

Another reason for burying the conducting wires of electric telegraphs, is that the Aurora Borealis has a great effect upon the instruments which are in the circuit of conducting wires suspended upon posts, the Aurora Borealis being a powerful source of magnetism. Dr. Dalton, in a work published in 1793, tells us that the region of the Aurora is 150 miles above the earth's surface, and that the beams of the Aurora are themselves magnetic, and are governed by the earth's magnetism. Hence it follows that the iron conducting wires upon the posts being a nearer and better conductor between the earth and it, that medium of affinity is, therefore, preferred, and the result is that the molecules of the iron being put into such a violent state of commotion as to defy the operator to pass any communications at the time.

The Patent Electro-Telegraphic Converser of Messrs. Brett and Little has been erected upon the following railways—viz.: the North-Western, the Leeds and Thirsk, the Whitehaven Junction, and Chester and Birkenhead in England, as also upon the Great Southern and Western Railway, in Ireland.*

RAILROADS IN PRUSSIA.—A summary of the report presented to the High Court by the Prussian Minister of Finance, shows that 29 railway schemes were sanctioned between 1837 and 1847. Of that number 21 are completed, and four are partly finished. These 29 railroads require a capital of 241,000,000f. The 21 already completed cost 125,000,000f.; the six unfinished ones, 20,000,000f.—total, 145,000,000f. The Government hope to be able to meet the expenses of the railroads with its ordinary resources; if this hope should not be realized, the Government requests permission from the High Court to contract a loan of from $3,000,000 to $4,000,000.

NEW ROTARY ENGINE.—Several trials took place, last week, on the Thames, in the neighbourhood of Taplow, of a new rotary engine, the invention of Capt. W. E. Fitzmaurice, late of the 2d Life Guards, and his brother-in-law, Mr. Harford. It was fitted up in a frigate's pinnace, 10 tons burden, carrying 5½ tons, and though calculated at 10-horse power, occupied only 21 by 7 inches. The boat is 32 feet long and 8 feet broad in the beam, and though intended to mount carronades and carry men, was not fitted for speed; she is propelled by a screw, 3 ft. diameter, worked by the engine, which made 200 revolutions per minute, and the boat made 2 miles in 20 minutes, or 8 miles per hour. It is stated that the working parts of the engine are most simple, consisting only of two pieces, which work with the greatest ease, are free from any dead points, and without the slightest vibration, however high the velocity. There are no springs or packing, and the motion being a rolling one, there is little friction, and the works last a great length of time without repair. It weighs less than 1 cwt. per horse power, and requires much less fuel than other engines. Capt. Fitzmaurice gives the invention freely to the public.—On Thursday last, Capt. W. H. Stewart, and Mr. F. P. Smith, of the screw-propeller department at the Admiralty, proceeded to Taplow to satisfy themselves how far the report of the perfection of Capt. Fitzmaurice's rotary engine was correctly stated, and, although the rain poured in torrents during a greater part of the time the experiments were carried on, they admitted the result to be very satisfactory. Not anticipating any visitors on such a day, the pieces which had been detached since the previous experiment were hastily put together, and the steam got up, and the boat started against the stream with seven persons on board. The rains had increased the depth of the river nearly 2 ft. since the previous trial, and made the navigation less difficult. The boat started in fine style, and on Mr. Smith timing the revolutions of the screw, he found them to be 192 per minute, and that may be considered the average speed on this occasion, with a very little exception, when the screw got entangled in weeds, which were soon removed when found adhering, by a few back turns of the screw. The distance run out and back was about 26 miles, and once through the lock of a canal, for which species of navigation it appears to be admirably adapted, having shown on a previous occasion its capabilities for towing by drawing a broad-bowed and flat-bottomed barge, 30 feet long by 12 ft. in breadth, at the rate of three miles an hour against the stream. The speed attained by the boat on this occasion was ascertained by Mr. Smith and Capt. Houston Stewart to be fully seven knots per hour, or 8·055 statute miles an hour, a remarkable result, considering that the boat was in no way constructed for speed. The ease with which the engine could be set in motion, and stopped or graduated to any degree of velocity up to its full speed, was a subject of surprise to the visitors, and the rough manner in which it was used to show its instantaneous effect, and difficulty to put it out of working order, could not be credited unless they were witnessed. The absence of vibration in the engine, and the uniform continuous motion, satisfied the visitors that Capt. Fitzmaurice had overcome the difficulties which eminent engineers have always considered it difficult to obviate in rotary engines, and they left on their return to town, much gratified with the result of all they had witnessed, and pleased with the minute details he entered into, when showing the model, and explaining the principle on which the two pieces of which it consists work the one within the other.

* In the foregoing remarks, the electric fluid is spoken of as passing through, &c.; not that it does flow through, but because it is the most familiar term.

BIRAM'S PATENT MINERS' LAMP.

Fig. 1.

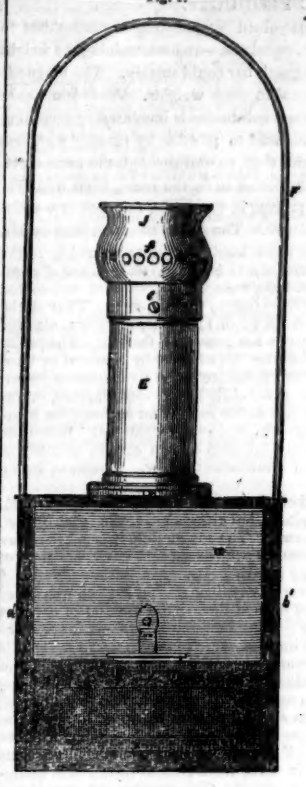


Fig. 2.

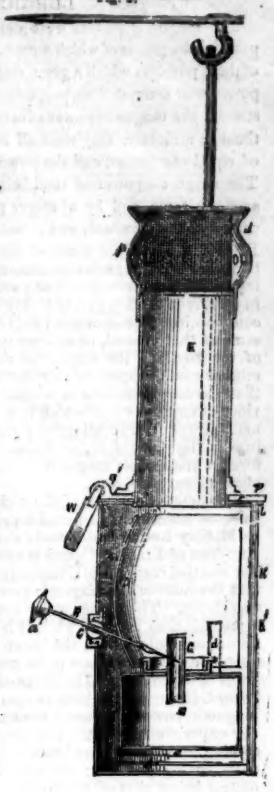


Fig. 3.

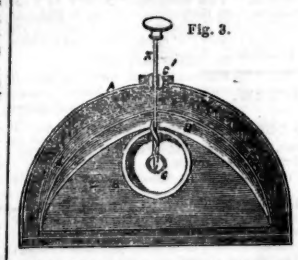
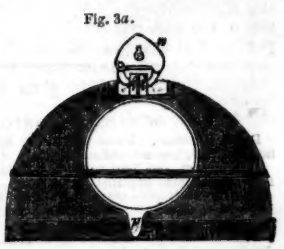


Fig. 3a.



Mr. Biram's invention has for its object to increase the light obtainable from those miners' lamps which are constructed on the principle of what is called "the Davy Lamp," and to afford better protection to the flame from currents of air. These several improvements are accomplished by constructing such lamps in the manner of the one represented in the annexed engravings. Fig. 1, is an external elevation of this lamp in its complete state: fig. 2, a side elevation of it partly in section; fig. 3, a plan on the line a^1 b^1; and fig. 3 ^{a}, a top plan. A is the external case, which is of the ordinary semicircular form, and suspended by a curved handle, F; B is the oil reservoir and wick-holder; this reservoir is slid in the casing, on grooved or mutually overlapping pieces, *a b*, one of which is affixed to the bottom of the case, and the other to the bottom of the reservoir; and *c* is a ring, by which the reservoir, B, is pushed into its place or drawn out when required to be replenished. C is the burner, with circular tube and wick, as usual; D is a metallic reflector of a parabolic or other suitable curvature, which is mounted behind the burner on two pins, *d d*, which rise from the top of the reservoir, B, and take into two short tubes soldered to the back of the reflector. E is a chimney, which rises from the top of the case (A), and may be made either wholly of metal or principally of wire gauze (like the common Davy lamp). If made of metal, it is surmounted by a cap, J, which is closed at top, but perforated in the sides by a circle of holes or slits, *f f*, which are protected within by a screen of wire gauze, *g* (see fig. 2); *e* is a screw, by which the cap, J, is made fast to the chimney, but which can be undone in order to allow the cap to be removed when it is necessary to examine, clean, or renew the wire gauze; K is the door, which drops into grooves made for it in the front edges of the case, and consists of a metal frame divided into two compartments; the upper and larger of which, *m*, being that in front of the light, is filled with talc, and the lower and smaller, *n*, is fitted with a portion of wire gauze, through which (alone) the air necessary to support the flame is supplied. The frame may be made a little narrower towards the bottom than at top, in order that it may the more easily be dropped into or raised out of its place; but when it has been once fixed in its place, care should be taken that it fits accurately throughout, and especially that the top flange, *l*, is brought close down over the grooves in which the door slides. P is a ring, which turns in a seat made for it on the outside of and close to the bottom of the chimney, E; *p*, is a pin which projects from the ring, P, and passing over the top of the door, K, secures it in its place; q^1 is an eye-piece, which is attached to the back of the ring, P, and is in the same diametrical line with the pin, *p*; and q^2 a companion eye-piece, which is affixed to the top of the case, A, and against which the other eye-piece abuts, when the pin, *p*, is moved round into a central position over the door, K.

When the two eye-pieces are brought side by side, the hasp of a small padlock, W, is passed through them, and the interior of the lamp thus perfectly secured against all meddling or intrusion; C (fig. 2) is a ball and socket, or universal joint, fixed in the back of the case, A; and R a pricker for raising, depressing, or trimming the wick, which is passed through the ball and through a corresponding opening in the focus of the reflector, D. The picker is free to move to and fro through the ball, but within certain limits, determined by a twist which is given to it at the inner end, to prevent its being entirely drawn out; and it has thus the power of universal movement, not in one plane only, but in as many different planes as come within the range of its to-and-fro movement through the ball. The lamp when in use may be suspended from a steel spike, driven into the coal or into a wooden prop, and this spike may have a swivel hook at the top, by which it may not only be attached for convenience of carriage to the handle, F, of the lamp, but be readily turned round from one position into another. When this lamp is taken into an inflammable atmosphere, the noxious gas which passes through the under or gauze compartment of the door ignites and burns within, with a slight blue flame, and very soon absorbs the supply of oxygen to the lamp and extinguishes the flame (unless the lamp is removed into fresh air), but with no other inconvenience to the bearer than the loss of his light.

To enable a person to work in a part of a mine charged with carburetted hydrogen (which may sometimes be necessary for a short time), a circular opening, protected by wire gauze, may be substituted for the under compartment, *n*, as indicated by the dotted lines, *t t* (fig. 1), and a tube of vulcanised India-rubber or other flexible material fitted to this circular opening; which tube may be of any length required to reach into the pure air. The lamp would then burn freely and securely for any length of time, being supported with pure air; although the workman himself might, it is true, be exposed to danger from breathing air deleterious to health, or even destructive of life. Instead of the door being made in two compartments, one filled with talc and the other with wire gauze, it may be made with a single opening by substituting wire gauze for the talc. Probably for viewers or overmen, the talc may be preferred, and for working miners, the wire gauze. The patentee has ascertained by numerous experiments that the light emitted through clear talc is rather more than that of four candles, and the light emitted through the wire gauze (in a lamp of this improved description) is about equal to that of an ordinary pit candle.—From the *Mechanics' Magazine.*

ON THE MAGNETIC POWER OF IRON, AND ITS METALLURGIC PRODUCTS.

The magnetic powers were determined by reducing the substance to powder, the grains of which were of equal size—and ascertaining the weight of these powders which a given magnetic bar could sustain. The magnetic power was estimated as proportional to these weights. As in some substances, the magnetic power of certain substances is increased by pounding them in a mortar, they were all reduced to powder by rasping with files of equal coarseness, and the powder then passed through the same sieve. The magnetic power of steel being found to be the same, from whatever source it came, and by whatever process it was made, this power was assumed as the standard, and called 100. The differences obtained by Mr. Barlow in his experiments of the same kind, appear to be owing to the temper; in our experiments the steel was annealed so as to allow of rasping. The magnetic power of pure iron, reduced by hydrogen and cooled in a current of this gas, is nearly the same as that of steel. That of the common iron of commerce varies from 90 to 110; it is, therefore, also the same as that of steel, or at least varies but one-tenth from it. The purity of the iron, and the method of refining it (whether by charcoal or bituminous coal), appear to exercise less influence upon its magnetic power, than the last operations to which it is submitted in its manufacture, or various circumstances of which it is impossible to give an account, the magnetic power of iron being very variable, and easily changed. When the iron is slightly rusted, or intimately mingled with a certain quantity of foreign matters, its magnetic power diminishes notably. The same is true of cast iron, steel, &c.

The magnetic power of the nickel of commerce is at least equal to 35. In some experiments I found it greater, but always lower than that of iron, as M. Gay Lussac had already shown. The magnetic power of the gray cast-iron of Franche-Comtè is about two-thirds that of steel; but that of the mottled cast-iron of Champagne is rather less. Mr. Barlow also found that the ratio of the magnetic power of cast-iron to that of steel, was about two thirds. The oxides which are formed during the making of bar iron by the English method, while it is passing between the rollers, have a variable magnetic power, the lower limit of which may be taken as 4; this magnetic power appears to be greater in proportion as the iron was at a lower temperature. The forge-cinders, similar to the above, which are formed during the making of iron under the hammer, have a very unequal magnetic power; its lower limit is about four, and its upper limit rose in our experiments to 22. The magnetic power of the rich cinder, whether coming from the refining hearths of Franche-Comtè, or from the bituminous coal-burning puddling furnaces, is about from two to three; it is immediately below that of the foregoing oxides. The magnetic power of the slag of an ordinary blast furnace employed in the making of iron, is variable; that of the mass was found about one, or even lower; but that of certain portions was as high as 20.—M. A. Delesse: *Comptes Rendus.*

New Patents.

LIST OF PATENTS GRANTED DURING THE PAST WEEK.

R. A. Brooman, Fleet-street, patent agent, for certain improvements in draught-horse saddles, harness, and saddle-trees. (Being a communication).

D. S. Brown, Old Kent-road, for certain improvements in apparatus or instruments for the fumigation of plants.

H. Attwood, engineer, Goodman's-fields, Middlesex; and J. Kenton, engineer, Bromley, in the same county, for certain improvements in the manufacture of starch, and other like articles of commerce, from farinaceous and leguminous substances.

E. A. Chamroy, of Rue du Faubourg, St. Martin, Paris, for a new system of railway, denominated (helicoide) helical railway, and a circular chariot.

A. P. Preterre, Havre, in France, for improvements in the construction of coffee and tea-pots, and in apparatus for cooking, grinding, and roasting coffee.

E. Heywood, Glosburn, York, for improvements in plain and ornamental weaving.

R. Griffiths, Havre, for improvements in steam-engines and in propelling vessels.

T. Marsden, Salford, machine maker, for improvements in machinery for hackling, combing, or dressing flax, wool, and other fibrous substances.

B. Goodfellow, Hyde, Chester, engineer, for certain improvements in steam-engines.

J. Potter, Manchester, machinist, for certain improvements in spinning and doubling machinery.

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

Betterley and Co., Liverpool, block sheave.

C. Minshull, Weston-street, Southwark, imperial hame.—*Mechanics' Magazine.*

ACCIDENTS.

Tipton.—Last week, when two men and two boys had gone down to work in a pit near the Coseley Tunnel, which had not been entered for some days, in consequence of the strike, the air was so bad, that all were suffocated, and brought out dead. The men's names were Jeavons and Grainger, and the boys Havell and Weston.

Brierley Hill.—S. Cartwright fell down the shaft of a pit near the Five Ways, Cradley, and was killed on the spot.

Dudley.—Joseph Cox was crushed to death in the Old Park Colliery, by a fall of about 80 tons of coal.

J. Shepherd and J. Pearson were severely burned about the back and arms at Messrs. Badger's Colliery, Old Hill.—S. Siviter was severely injured, by a like cause, at the New Lion Colliery, and A. Parsons was much hurt by a fall of roof at the Eagle Colliery.

Sedgley.—J. Hyde was killed by a fall of coal in a pit at the dock.

Cyfarthfa.—One of the segments of the large fly-wheel of the engine, from some unknown cause, flew off, and dashing in among the machinery caused immense destruction; two water-wheels were broken, and machinery injured which it will take two months to repair. Fortunately no lives were lost.

Manchester.—John Collier was killed on Saturday last by the rope breaking in a new pit on Tonge Moor, the property of Messrs. Blair and Burton.—Another man, named W. Drennand, met his death in another pit from the same cause, being precipitated 26 yards down the shaft.—J. Richards, a joiner, residing in Oldham, who had been six months sorely afflicted with rheumatism, deliberately jumped down a coal-pit in Bradford-road, 28 yards deep, and was taken out dead.

Newbiggin Iron-Works.—A new pipe, or tunnel, was being erected from a blast-furnace to carry off the sulphurous gases, when the communication was inadvertently opened to try the effects, without giving sufficient notice to the men at work, when eight individuals were taken out insensible; all were recovered but one, named James Snee, who lingered until next morning, when he died.

Pendarren.—Two men, while working in a pit at these works, the property of Alderman Thompson, were killed by a fall of roof. The quantity of stone which fell was 2 or 3 tons, and they were literally smashed to pieces.

Newcastle.—George Bolton was crushed to death by a fall of coal in Radcliffe Colliery.—Thomas Pattison and James Daglish were killed at Percy Main Colliery, by the breaking of a chain.—W. Brown was run over and killed by a waggon, on the Heworth waggonway; and T. Cummins was crushed to death on the Derwent waggonway, Sunderland.

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Bate's West Hartley 14 6—Buddle's West Hartley 15—Carr's Hartley 15—East Adairs Main 13—Hastings Hartley 15—Holywell Main 14 6—Jonassohn's Hartley 14—North Percy Hartley 14 6—Ord's Redheugh 13 6—Ravensworth West Hartley 14—Tanfield Moor 14 6—Townley 14—Walker's Primrose 12—West Hartley 15 6—Wylam 15—Wall's-End Acorn Close 15—Brown's 14—Brown's Gas 13—Morrison 14 9—Percy 14 3—Riddell 14 3—Walker 14 6—Eden Main 15 6—Lambton Primrose 15 6—Bell 15 3—Hetton 16 6—Haswell 16 9—Lambton 16—Stewart's 16 6—Caradoc 15—Denison 14 9—Heugh Hall 15 6—Kelloe 15 6—West Hetton 15—Whitworth 14—Richardson's Tees 14 3—South Durham 15—St. Helen's Tees 15 3—Tees 16 6—West Cornforth 15 6—Cowpen Hartley 15 3—Hartley 14 6—Howard's West Hartley Netherton 15 3—Sidney's Hartley 15.—Ships at market, 216; sold, 102.

WEDNESDAY.—Bate's West Hartley 14 6—Buddle's West Hartley 14 9—Carr's Hartley 14 9—East Adair's Main 13—Hasting's Hartley 15—Holywell Main 14 6—New Tanfield 13 3—Ord's Redheugh 13 6—Ravensworth's West Hartley 14—Tanfield Moor 14 6—Townley 14—Walker's Primrose 12 3—West Hartley 15 6—Wall's End Brown's 14—Brown's Gas 13—Morrison 15—Percy 14 3—Riddell 14 6—Walker 14 6—Eden Main 15 6—Bell 15 3—Belmont 15 9—Hetton 16 6—Haswell 16 9—Lambton 16—Plummer 16 3—Russell's Hetton 16 9—South Hartlepool 15 6—Whitworth 14—Adelaide Tees 15 9—Cowndon Tees 15—Seymour Tees 15—Tees 16 6—Hartley 14.—Ships, 148; sold 84.

FRIDAY.—Bate's West Hartley 14 6—Carr's Hartley 14 9—Adair's Main 13—Hasting's Hartley 15—Holywell Main 14 6—New Tanfield 13 6—Ravensworth's West Hartley 14 6—Tanfield Moor 14 6—West Hartley 15 6—Wylam 15—Wall's-End Bensham 14 6—Gibson 14 6—Morrison 15 3—Northumberland 14 9—Eden Main 16—Lambton Primrose 15 9—Belmont 16—Braddyll 16—Hetton 16 6—Haswell 16 9—Lambton 16—Russell's Hetton 16—Stewart's 16 6—Whitwell 15—Hartlepool 16 3—Thornley 16—Whitworth 14—Adelaide Tees 16—West Pease 13 9—Seymour Tees 15 3—St. Helen's Tees 14 6—Tees 16 6—West Hartley Netherton 15.—Ships at market, 79; sold, 62.

COAL TRADE.—Delivery of coals, &c., in the port of London during August:—

Newcastle	*Ships* 454	*Tons* 132,147	
Sunderland	352	91,725	
Stockton, Middlesbrough, &c.	233	70,785	
Blyth	42	8,677	
Scotch	4	675	
Welsh	33	7,387	
Yorkshire, &c.	54	3,565	
Small coal	3	406	
Culm	1	210	
Cinders	5	421	
Total	*Ships* 1231	*Tons* 316,198	

THAMES TUNNEL COMPANY

The number of passengers who passed through the Tunnel in the week ending Sept. 8, was—No. of passengers, 11,112.—Amount of money, £46 6s. 0d.

ARGENTIFEROUS LEAD AND ZINC MINE OF PONT PEAN.

Mines of lead and zinc are extremely rare in France, the two principal profitable works being those of Poullamen, in Brittany, and Villefort, on the Loire. There is, however, a third which has hitherto been but little known, called the Mine of Pont Pean, situate in Ille de Vilaine, which, notwithstanding the abundance and richness of the ores, has been abandoned for half a century. It was opened in 1732, and continued productive until 1793, when the political disturbances of France paralysed every industrial enterprise, and caused the mine, among many others, to be suspended. It is situated eight kilometres from Rennes, near the main road of Nantes, on the banks of the Seiche, which river is navigable from this point as far as the Vilaine, from whence there are boats from Rennes to Redon, a sea-port. Thus its approaches by land and water offer, at all seasons, cheap means of transport for fuel, materials, and provisions. The concession extends over eight kilometres (60 hectares) of land. The old vein, which had been originally worked, varied from 18 to 30 yards in breadth, containing silver, lead, and zinc, in such abundance that the worked-out galleries have been filled up with rich ores, which may be got out at a trifling expense.

Independent of several thousand tons of ore left on the soil, and in the interior galleries, or neglected in the parts already worked, this vein, which runs from north to south, has been followed and uncovered for the length of 250 metres, by a parallel gallery with openings of 40 to 50 metres apart, leaving an immense quantity of ore in sight, ready to be taken as soon as the waters shall be drained. Had it not been for this obstacle (which is no longer one in the present day), it could have been followed much further, but the former owners contented themselves with the riches so easily obtained. It was, at the first, found to be 1200 metres, and, at the second, 2400 metres from the point where the former works had stopped. It may, therefore, be affirmed, without fear, that the mass of metal is very abundant, especially as several veins have been discovered in other directions as important and easy to work. The mines are in a perfect state of preservation, having been continually under water impregnated with zinc, in a state of sulphate, which has preserved the wood-work of the galleries in the most perfect state. As a proof of what the mines were capable of yielding, we give the following results of the last five years' workings:—In 1789, 660,200 kilos of argentiferous ore; in 1790, 656,050 kilos; in 1791, 682,150 kilos; in 1792, 778,863 kilos; and, in 1793, 662,750 kilos. The washed ore yielded, per quintal, 32 kilogrammes of lead (64 lbs. per kilo) and 250 grammes of silver, which was equal to 250,000 fr. (10,000*l.*) in lead, and 1000*l.* in silver. The annual receipt was then 274,000 fr. (or about 11,000*l.*), whilst the expenses, including every description of machinery, at that time very expensive, did not amount to 8000*l.* It must be noticed that no advantage was taken of the zinc and the silver it contained. Mr. J. Hunt, an English engineer, one of the directors of the mines of the Isle of Sark, having been invited to examine the mine of Pont Pean, has discovered in the surface several thousand tons of argentiferous lead, which yielded from 10 to 15 per cent., and containing from 30 to 60 ounces of pure silver per thousand kilogrammes, or ton. According to estimates which have been made by several experienced parties, the yield of washed ore ready to be smelted, if worked the year round, would be at least 378,952 fr. (15,158*l.*), giving a net profit of 6558*l.* annually, after deducting all expenses.

Besides the above estimates, made by three conscientious and scientific men, M. Mathieu, Chief Engineer of Mines, gives a report on the richness of the vein discovered in a length of 250 metres (yards). He estimates its thickness in pure ore as, at least, a cubic foot, which will yield according to the results of former years, a value of about 10,980,195 fr. (439,208*l.*). This ore will be accessible so soon as the water shall have been drained off from the mine, to accomplish which a steam-engine of 60-horse power would be sufficient to work the mine to a far greater depth, which would also prevent any interruption to the works, and the enormous losses consequent thereon. The treating of the ore according to the most approved principles, and the application of the recent discoveries in the smelting and refining of ore, would be productive of the most profitable results.

According to the calculations of Mr. Hunt, who is the present concessioned owner of the mine, and several other competent persons, it has been ascertained that a capital of 300,000 fr. (12,000*l.*) will be more than requisite to resume the workings by the new company, which is effectually being organised; and, in all probability, the calls will not exceed 8000*l.* A company thus formed, with a capital of 12,000*l.*, would immediately obtain from the proprietor the concession of this mine, consisting of all the former works and superficial erections, with the right of working the present level, and to extend the workings more than 8 square kilometres, on condition of his receiving 1-10th of the net profits, and a certain number of shares, for the advantages he gives up to the company.

WRIGHT'S PATENT STEAM GENERATOR.

Some experiments on the capabilities of this apparatus, which we described at some length in last week's *Mining Journal*, were made on the 8th inst., at Great Suffolk-street, Borough; and the result was highly satisfactory to all present, and also fully bore out the representations made from time to time in our columns. The experiments on Saturday last, at which we were present, gave an evaporisation of 12¾ lbs. of water by the combustion of 1 lb. of coal—that obtained by the usual construction of boilers not exceeding 8 lbs., or an increase, by the application of the patent, of 60 per cent. of evaporative power. Besides the saving of fuel thus to be effected, there is the advantage that the flame scarcely impinges on the boiler, arising from the intervention of the cellular vessel; and the boiler is accordingly saved from the rapid deterioration to which it is now exposed by the excessive heat which plays upon it. As applied to steam navigation, the effect of so reduced a consumption of coal in the working of large steam-vessels, must be obvious—the saving, in the shape of 50 to 60 per cent. in the article of fuel, being further increased by the extra space rendered available for the stowage of freight, or, on the other hand, the accelerated speed in steam propulsion, arising from a lightened burden of coal, are all advantages, the vital importance of which it is almost supererogatory to notice.

The experiment was commenced 12 h. 47 m. P.M., when 56 lbs. of best engine coal, weighed with great nicety, was thrown into the furnace, the working temperature of the water in the boiler being 201° Fahr. At 1 h. 59 m. P.M. or 1 h. 12 m. from the commencement of the experiment, the indications of the water gauge were taken, from which it appeared that, in that period of time, the apparatus had vapourised 720 lbs. of water, equal to 12·86 lbs. of water converted into steam by 1 lb. of coal. The general size of the boiler, which is of the waggon form, without a flue, is 6 ft. 9 in. long, 3 ft. 6. in. wide, and 2 ft. 6 in. high; the area of the bottom is about 21 superficial feet. The flue surface is about 23 feet area. The area of the cellular plates exposed to the direct action of the fire is about 25 ft., and that of the plates within the boiler about 23 ft. The fire-bar surface is equal to 4 square feet. The quantity of water in the boiler is about 1500 lbs., and that contained in the cellular vessels about seven gallons. The quantity of water said to be evaporated by this boiler is about 12 cubic feet per hour, making it capable of raising steam sufficient for a 12-horse power engine, although its dimensions are only equal to that of an ordinary 4-horse power boiler.

It may be observed, as relates to the economy calculated upon by the application of the patent to steam navigation, not to advert to the saving of space, that, taking a vessel of 400-horse power, such is found to consume about 27 tons of coal per day of 24 hours, which, with a saving of 60 per cent., assuming the passage to be 15 days, would give the following results:—Consumption of coal, say, 400 tons, saving 240 tons, which, if taken at 40s. per ton, including the cost of coals, and allowance for space occupied, and which might otherwise be applied, would give a saving of 480*l.* We are aware that an estimate has been made, whereby our assumed saving is carried out more than threefold on a voyage of 45 days; but we think the present statement amply sufficient to establish the saving which may be effected.

As applied to locomotive engines, it is to be supposed the patent will be equally applicable, although we are well aware that difficulties present themselves which do not apply to stationary engines, or those employed for steam navigation. The cost of coke per mile is, however, so formidable an item, that any saving which could be effected would necessarily lead to a considerable increase of profit and dividends to the shareholders. We do not deem it necessary further to enter on the varied applications, such as breweries, distilleries, and other establishments, where large quantities of liquid are required to be boiled, heated, or converted into steam, as the excess of power obtained is equally applicable, and a comparative saving consequently effected.

Mining Correspondence.

BRITISH MINES.

ALFRED CONSOLS.—Field's engine-shaft is sunk 9 fms. 5 ft. 3 in. under the 50 fm. level; the lode in this level is looking very encouraging, so much so, that we have determined to sink this shaft 9 ft. deeper before we commenced driving, when we hope to drive in a good course of copper ore. The lode in the 50 fm. level, east and west of the engine-shaft, is without change since my last report. The lode in the 40 fm. level east is improved in size, and yields some good stones of copper ore. The water still continues to sink under the adit in the Great Wheal Alfred Mine about 2½ ft. a week.

BARRISTOWN.—The branches in the end driving east over the adit level are looking better—they are producing at present about 5 cwts. of lead per fm.; and the end, for 2 ft. wide, is well mixed with them—the largest about 3 in. wide. The stopes in the back and bottom of the adit level, west of the slide, are producing not altogether so much lead as for some time past. In the rise in the back of the 16 fm. level, to unwater those stopes, the lode is thinly mixed with lead. The stopes in the bottom of the adit, west of Dooge's shaft, is producing about 6 cwts. of lead per fm.; and in the winze sinking in the bottom of the adit level, to the west of those stopes, we have good stones of lead in a large promising lode. Nanglo's shaft is down 9 ft. under the adit level, and the present price of sinking it is 2*l.* 10s. per fm. The water is drained in the old mine to the 18 fm. level, and we expect in a day or two to have the cross-cut driving south from the bottom of Kiln shaft about 10 fms. under the 18 fm. level.

BEDFORD UNITED.—The engine-shaft is sunk 5 fms. 3 ft. below the 103 fathom level; the ground is not quite so hard, and we hope to make better progress this month. The 103 fm. level, east of the engine-shaft, has been extended 3 fms. 3 ft.; there is a small branch of spar in the present end, letting down some water; it may prove to be the south lode. The 103 fathom level, west of Burley's winze, has been extended 3 fms. 2 ft.; the lode is nearly 3 ft. wide, with a good leader of ore, and is evidently improving; the same level has been extended 1 fm. 2 ft. east of Burley's winze. In the present end the lode is 3½ feet wide, composed principally of spar. We have 2 or 3 fms. more to drive to reach the shoot of gossan ore. The 90 fm. level east has been extended 1 fm. 4 ft. 7 in. by the side of the lode and the lode cut into. It is more kindly than for some time past, will yield good saving work, and leave ground that will set at a moderate tribute. The 70 fm. level has been driven 2 fms. 6 in.; the lode in the end is 2½ ft. wide, yielding good saving work, and likely to improve. Crewe's winze is not yet unwatered, and, therefore, the men are set to stope westward on tribute, at 5s. in 1*l.*, until the winze shall be drained by the level coming towards it from Burley's winze. The tribute department remains without any material alteration, and we have sufficient ore raised for our next sampling.

BRYN-AR-IAN.—The lode in the 10 fm. level, east of engine-shaft, is 10 ft. wide; the part which we are carrying for the level, is producing upwards of 1 ton of ore per fm. We have commenced driving the 10 fm. level west from the slant, where the lode is at present about 4 ft. wide, composed of killas, spar, and branches of lead ore—this end has a promising appearance. The stope back over the deep adit level, west from the winze, is yielding 1 ton of ore per fm.; the stope east from the shaft, back of this level, produces about 15 cwts. of ore per fm.; the stope in the bottom of this level, east and west from the winze, is yielding about 10 cwts. of ore per fm.

CALLINGTON.—At the north mine we have commenced the cross-cut west towards the lode in the 125 fm. level. In the 112 fm. level north we are opening moderate tribute ground; the rise in the back of the 112 fm. level south will produce 5 cwts. of silver-lead ore per fm; when this rise is communicated with the level above, we shall be in a better position to increase our samplings; at present each end of the rise will work at from 4s. to 5s. tribute. The lode in the 100 fm. level north is large, producing stones of silver-lead ores. The lode in the 90 fm. level south is at present disordered by a small cross-course; the 90 fm. level west, on Kelly Bray lode, is producing stones of copper ore. The 70 fm. level east, on Kelly Bray lode, is producing good stones of copper ore. In the 50 fm. level east, on Kelly Bray lode, the lode is still large, with spots of copper ore. The lode in the 20 fm. level east is at present disordered. At the south mine, in the 125 fm. level north, no lode has been taken down; in the 125 fm. level south the lode is yielding silver-lead ore. In the winze sinking below the 112 fm. level north, no lode has been taken down since last reported on. In the 90 fm. level south no work has been done in the last fortnight, the men being all sick. The 40 fm. level south is producing silver-lead ore. We sampled this day, computed 46 tons of rich silver-lead ores; although this is short of our last sampling, we must confess it is much larger than we anticipated. The prevailing epidemic has been very bad here, laying a great number of our men off work for some time past. Samples of the above parcel of ore are forwarded to the different smelters as usual.

CARADON UNITED.—We have driven west of the shaft, and cut through the lode where it is from 5 to 6 ft. wide, still composed of a strong gossan and soft spar, and have seen portions of copper ore in it; we have also driven east of the shaft by two men, and are now cutting through the lode at that point, where I think it is much larger. We are now sinking the shaft by nine men, and are down under the 50 fm. level about 8 ft.—since this month is in, I have set to the men at 12*l.* per fm. I hope shortly to put two men to drive south, to intersect the first two or three lodes that are not far distant from Morshead's lode. I have purchased a lift of pumps at Wheal Mary Mine; the particulars you will find in the cost-sheet for August month.

CWM ERFIN.—The stopes in the 20 fm. level from the engine-shaft, 10 fms. east, are worth 7*l.* per fm. The stopes from the 10 to the 20 fm., east of ditto, are worth 10*l.* per fm. The stope from the 20 to 30 fm., east of ditto, is worth 10*l.* per fm. The stopes from 30 to 40, east of ditto, are worth 10*l.* per fm. The stopes from 40 to 50, east of ditto, are worth 10*l.* per fm. The 20 fm. level, east of the whim-shaft, is poor. The stopes over the 10 fm. level, 20 fms. east of the whim-shaft, are worth 8*l.* per fathom. Our winze, 25 fms. east of the whim-shaft, has been sunk to our 20 fm. level, and we have set the end to drive east, which is worth 10*l.* per fm., and the end to drive west is worth 8*l.* per fm. Our stopes east of the engine-shaft are let at 55s. per fm.; ditto 10 fms. east, 70s. per fm.; ditto 20 fms. east, 70s. per fm.; ditto 30 fms. east, 70s. per fathom; ditto 40 fms. east, 60s. per fm.; the 20 east of whim-shaft at 120s. per fm.; the stopes 20 fms. east of ditto, 55s. per fm.; the 20 east of Roberts's winze, 140s. per fm.; the 20 west of ditto, 140s. per fm. Our estimates of breakage are 25 tons for the coming month. Our machinery is working well, and our dressing getting on much as we anticipated.

DEVON AND COURTENAY.—The lode in the winze in the bottom of the 40 fm. level is 4 ft. wide, still composed of white iron, prian, and some branches of soft white killas, in which are spots of ore, and the water continues favourable for sinking; in the rise in the back of this level the lode is 2½ ft. wide, of which a leading part from 4 to 6 in. wide is good saving work. In the cross-cut driving north in the 50 fm. level, the lode is not yet intersected; in the cross-cut on which we are driving there are some fine strings of yellow ore, from which I conclude we cannot be far from the lode. The pitches in the back of the 50, on the south lode, continue to look well.

ESGAIR LLEE.—The lode in the winze under the shallow adit is looking quite as well as last reported—now down 9 fms. 2 ft. 6 in. The north part of the north lode, in the deep adit east, is looking much the same as last reported, and the level is getting dry over head.——*Sept.* 12.—The north lode, in the deep adit east, I think, is worth from 5*l.* to 6*l.* per fm; the lode in the winze is worth about 10*l.* per fm., and the lode in the stopes, below the deep adit, is worth from 3*l.* to 4*l.* per fm. In order to push the winze with all possible speed, we have nine men in it, and have four men stoping in the bottom of the deep adit, east of the engine-shaft, at 45s. per fm.

EXMOOR WHEAL ELIZA.—During the last week, 6 ft. have been driven on the course of the north lode, in the 24 fm. level, which is from 4 to 5 ft. wide, composed of mundic and copper, not rich enough to save, but of such a character as would justify any practical agent in concluding that it is almost contiguous to a course of ore. The south cross-cut is progressing favourably.

HEIGNSTON DOWN CONSOLS.—The ground in Bailey's engine-shaft is without important alteration during the week. The 35 fathom level, east of the cross-cut, continues to present favourable indications of increased quantities of mineral as the mine is being developed. The 20 fm. level, west of Hutchins's shaft, has been driven about 6 ft. The men being engaged dropping lift, &c., in my next we shall be able to speak more fully as to the nature and quality of the lode in this part of the operations.

HOLMBUSH.—The lode in the 120 fm. level south is 3 ft. wide, and will produce 5 cwts. of lead per fm. The ground in the 120 fm. level cross-cut south, towards the flap-jack lode, is favourable. The lode in the 110 fm. level south is 3½ ft. wide, producing about 4 cwts. of lead per fm.—ground favourable for exploring; the stopes in the back of the level will produce 3 cwts. of lead per fm. The flap-jack lode, in the 100 fm. level, east of the great course, is 18 inches wide, composed of spar, mundic, and spots of copper ore.

KINGSETT AND BEDFORD.—*Sept.* 10.—I was underground on Friday last, and am most happy to inform you that we have a great improvement in driving south of the rise; the lode at present is better than 2 ft. wide, with two well-defined walls, producing splendid work—I will tell you the value per fathom when they take down the lode, which will be in a day or two. We are now engaged in laying down railways in the 40 fm. level, after which we shall commence rising further south, where we expect to meet with the same shoot of lead that we are driving on 8 fms. above. The copper lode is looking much better; we shall cut into it this week.——*Sept.* 11.—We have a fine course of lead in the end south of the rise, it is equally good now as when it was out in the rise, all of 2 ft. wide; if it continues for a few fathoms as it is now, it will leave fine backs and bottoms for stoping after the railway is in, which is going on very satisfactorily. We are now desuing, which will enable us to take the lode down cleaner. The men are doing the same in the rise on the counter lode, and we shall know no more of it for a few days, when they will have taken down the lode. There is no material alteration in the copper lode since I last wrote you.

KIRKCUDBRIGHTSHIRE.—There is a very kindly lode in the 62 fm. level east, yielding half a ton per fm.; in the west end it is worth 5 cwts. per fm. The 50 end east is still looking slight. Keith's shaft has a lode 5 ft. wide, with small spots of lead in places. The lode in the 50 end west is 3 feet wide, with good stones of ore, and very kindly.

LEWIS.—The lode in the engine-shaft, sinking below the 70 fm. level, is 2½ ft. wide, yielding some spots of tin, but not to value. The lode in the 70 east is 15 in. wide, saving work; the 70, east of sump-shaft, on south branch, is worth 5*l.* per fm.; the lode in the 70, east of ladder road winze, on south branch, is at present small, and disordered by a hard floor of ground. The 60 east, on south branch, is producing good quality tinstuff, driving at 8s. tribute; the 60 east, on Cock's branch, is much the same as when last reported; the winze which was sinking below the 60, on Cock's branch, is now communicated to the 70 fm. level, having opened a very valuable piece of tin ground; the ground in the 60, south from sump-whim shaft, is hard. The 50, east from copper ore shaft, on Cock's branch, is worth 4*l.* per fm.; the winze which was sinking below the 50, on Cock's branch, is holed to the 60 fm. level; since my last the south lode in the 5, east from Oak shaft, is 1 ft. wide, yielding some good quality tinstuff, with a very promising appearance. The lode in the 40 east, on Cock's branch, is 1 ft. wide, driving at 10s. tribute; the lode in the same level west, on Cock's branch, is 8 in. wide, opening tribute ground.

MENDIP HILLS.—During the past week our progress with Ubley dressing floors has been favourable. We have the whole of the washing strakes, slime boxes, and buddles fixed in their places, and hope by the latter part of the present week to see the jigging machines in a forward state. Charterhouse Valley remains without the slightest alteration, the beds of slag stuff being about 15 ft. thick, producing some good quality slags. We have a large pile of slags prepared for our blast furnaces, I hope sufficient to produce from 15 to 20 tons of lead, which we intend sampling this week.

SOUTH WALES MINES.—The north lode, in the Bodcoil deep adit west is looking much the same as last reported—about 1 ft. wide, composed principally of grey slate, but poor for lead. At Dalwin, the south, or the Frongoch lode, in the deep adit, east of the Rhydnet river, is much the same as last reported, looking very kindly, and producing mundic, copper, and lead, but not sufficient to put a value on.

SOUTH WHEAL TRELAWNY.—The engine-shaft is in course of sinking below the 40 fm. level with nine men; the ground is also more favourable than when

last mentioned, also the strata of ground at present is composed of deep blue killas, and the floor of elvan and caples have left us. Everything is in a regular course of working—water just the same as usual.

TAMAR SILVER-LEAD.—At the engine-shaft the lode is 1 ft. wide, at present poor. In the 190 end, driving south, the lode is 2 ft. wide, yielding work of a promising character. In the 175 end the lode is 3½ ft. wide, interspersed with ore, good stamps work. The 160 end is still in slidy ground, and unproductive. In the 145 end the lode is 18 in. wide, producing good saving work. In the 130 end the lode is 1 ft. wide, composed of flookan and ore, work of a good quality. At North Tamar, the 80 fm. level is suspended for the present, and the men put to sink a winze for ventilation, which we hope will be completed by the end of this month. In the 70 fm. level we are driving two ends north, one on the west, and the other on the east part of the lode, both of which are opening ground that will set at a moderate tribute; in the same level, driving south, the lode is 3½ ft. wide, and producing work of a promising character. We sampled on the 1st inst., computed 82 tons of rich silver-lead ores.——*Sept.* 12.—Our prospects are looking well. The lode in the 190 end is full 2 ft. wide, composed of quarts, mundic, and ore; it is the most promising end we have had to close the shaft for a long period. The 175 is also improved, although it is not rich, yet the locality of the ground is looking well. We have said in our report, the 160 end is in slidy ground, but if rightly understood, it is of greater value for that; I wish to see the slidy ground oftener. The 145 end has just passed through the run of can ground, and if the slides continue the same as they have in the levels above, we may look forward for a long piece of very ground in this level. The 135 end has just passed through upwards of 50 fms. of exceedingly rich ore ground, and how much farther it will continue we cannot say. I am happy to say the pitches generally are looking favourably. At the north mine we have suspended the 80 fm. level, in order to put the men to sink a winze from the 70 fm. level to the 80, which is partly done already. In the 70 end south the lode is 3½ ft. wide, saving work; the ground is very hard for driving. In the north end the lode is 3 ft. wide, composed of can, with good spots of ore; you are aware we are driving on the eastern branch at this level north, as well as south, where we find the branch to be 1 ft. wide, tolerable saving work. It may be said this mine is just the same as it has been for months past, although we did not sample as much ore last time, by means of the illness of the people. I hope this will not occur again, as there is but very little cholera now in Beeralston.

TAVY CONSOLS.—The ground in the 46 fm. level, west of the cross-course, is changed, and is much better for tiriving; the south wall continues regular and well-defined: the lode here is composed of peach, spar, mundic, and small portions of copper ore. In the 12 fm. level, west of Jenkins's rise, the lode is of the most promising character that I have yet seen in that level: we are carrying it in size about 4 ft. 6 in. wide, but have not got the north wall; the ore is more free from mundic than it has been; lode composed of peach, soft white spar, and copper ore of good quality; the lode here is full of vughs, with beautiful cubes of copper in them, and a more promising end cannot be seen in any mine. The run in the back of the 12 is looking well; we cut a vugh in it today much like that in the 12 end. The stopes continue without alteration. We sampled for August, 35 tons 7 cwts. of dry ore, which will pay the cost, and hope to have more for the present month, say from 40 to 50 tons. All our machinery in good order.

TINCROFT.—At Palmer's shaft, on East Pool lode, sinking below the 90 fm. level, the lode is 4 ft. wide, with spots of ore; the lode in the 90 west is 2 ft. wide, with good stones of copper ore. In the 80 fm. level west the lode is 3 ft. wide, worth 9*l.* per fm. for copper. The 36 fm. level is driving west towards Stainsby's shaft: the lode is 1½ ft. wide, with good stones of copper ore. In the 24 fm. level west the lode is 1 ft. wide, with some ore, but not to value; in the bottom of this level we are sinking a winze, the lode in which is worth 40*l.* per fm. for copper; in the back of this level we have set a pitch, for 4s. 6d. in 12. At North Tincroft, the engine-shaft is sinking below the 100 fm. level, but we have not taken down any lode since last report. In the 100 fm. level east the lode is 3½ ft. wide, worth 11*l.* per fathom for copper. In the 100 fathom level west the lode is 2 ft. wide, worth 9*l.* per fm. for copper. In the 90 fm. level east the lode is 2 feet wide, worth 11*l.* per fathom for copper. The 90 fathom level west is worth 8*l.* per fathom for copper. On Highburrow lode, in the 152 fathom level, east of the engine-shaft, the lode is 4 feet wide, worth 15*l.* per fathom for tin. In the 142 fathom level, east of Martin's east shaft, the lode is 5 ft. wide, worth 16*l.* per fm. for tin; the stopes in the back of this level, east and west of the shaft, are worth 18*l.* per fm. for tin. In the 132 fm. level, east of Martin's east shaft, the lode is worth 17*l.* per fm. for tin.; the stopes in the back of this level, east and west of the shaft, are worth 16*l.* per fm. for tin. In the 120 fm. level, west of engine-shaft, the lode is 4 ft. wide, worth 11 per fm. for tin. In the 110 fm. level, driving east of Cook's Kitchen, the lode is 8 ft. wide, worth 6*l.* per fm. for tin and copper. On Chapple's lode, in the 100 fm. level, east of Downright shaft, the lode is 3 ft. wide, worth 3*l.* per fm. for tin. In the west end of the same level, the lode is worth 14*l.* per fm. for copper. The 90 fm. level west is worth 20*l.* per fm. for tin and copper. In the 80 fm. level west the lode is 2 ft. wide, worth 8*l.* per fm. for tin and copper. At Wheal Providence the lode in the engine-shaft, sinking below the 33 fm. level, is 3 ft. wide, with spots of ore.

TRELEIGH CONSOLS.—Garden's shaft, below the 113, is sinking in the country. In the 90, west of ditto, lode 20 in. wide, with stones of ore. In the 80, west of ditto, lode 18 in. wide, with good stones of ore; in the 80, east of ditto, lode 2 ft. wide, worth 8*l.* per fm. In the winze below the 80, lode 18 in. wide, with stones of ore. In the 60, west of Garden's, lode 20 in. wide, poor. At Wheal Parent, the engine-shaft, below the 30, is sinking in the country. In the 30, east of ditto, lode 2½ ft. wide, worth 20*l.* per fm. In the rise above the 30, lode 3 ft. wide, worth 20*l.* per fm. In the 30, west of ditto, lode 18 in. wide, with stones of ore, and is looking kindly. In the winze, below the 20, lode 2 ft. wide, with stones of ore. In the whim shaft, below the 12 fm. level, lode 18 in. wide, with good stones of ore. Nicholson's shaft below the adit, on the middle lode, lode 1 ft. wide, poor.

WEST WHEAL JEWEL.—The 85 fm. level, west of Williams's cross-course, on Wheal Jewel lode, not taken down in the past week—ground favourable for driving. The 70 fm. level west, on the same lode, not taken down in the past week. The 47 fm. level, east of ditto cross-course, on the same lode, worth 5*l.* per fm. The deep adit, west of ditto cross-course, on the same lode, unproductive. The deep adit, west of Tregoning's, on Tolcarne tin lode, not taken down in the past week. The stopes in the back of the 12 fm. level, west of Pryor's winze, on the same lode, lode worth 9*l.* per fm. The stopes east of this winze, in back of the same level, worth 8*l.* per fm. The stopes in the bottom of the 12 fm. level, east of Tregoning's shaft, on same lode, worth 16*l.* per fm. The stopes in the bottom of this level, west of Tregoning's winze, on same lode, worth 18*l.* per fm. These stopes are working on tribute.

WHEAL TRELAWNY.—The lode in the 82, north of Phillips's shaft, is 5 ft. wide, and worth 8*l.* per fm.; in this level south the lode is 5 ft. wide, and worth 5*l.* per fm., and looking very promising. In the 72, north of this shaft, the lode is 3½ feet wide, and worth 8*l.* per fm.; in this level south the lode is 3 ft. wide, and worth 10*l.* per fm.; in the winze sinking under this level, north of the shaft, the lode is 3½ ft. wide, and worth 8*l.* per fm.; there is no alteration in the stopes in the back of this level worthy of notice. In the 63 north the lode is improved since last week, being now 5 ft. wide, and worth 20*l.* per fm.; the stopes in the back are much as usual. Trelawny's shaft is now down 3 fms. 4 ft. below the 72—ground favourable for sinking; the lode in the 72, both north and south, is much the same as last reported. In the 53 north the lode is 3½ feet wide, and worth 15*l.* per fm.; the stopes are producing much as usual. At the north mine, the lode in the 55, north of Trehane, is about 2 ft. wide, worth 10*l.* per fm. In the 55, north of Smith's shaft, the lode is 2½ ft. wide, and worth 7*l.* per fm.; in the same level south the lode is also 2½ ft. wide, and worth 7*l.* per fm. In the 40 north the lode is still unproductive, and we have not yet cut the cross-course; the stopes in the back of this level still continue to produce fair work.

WHEAL TRESCOLL.—Since my last report, we have a great improvement in the west end at the 10 fm. level; the lode is now 3 ft. big, with a very fine course of tin in it. I cannot state the exact value of it, as we have not taken down the lode for some days past, but shall do so to-morrow, when I shall be able to report more fully on it; but I believe, from the appearance of the lode, that we are near a very rich course of tin. It is nearly under where the old men made great workings at surface, and now we find large stones of tin, and I believe it is the same run of tin that we cut in the plat at this level; we have driven over it 45 fms. west, and have seen it more or less in the bottom of the level all the way in driving. All the backs are just the same as last reported on—good paying work. The engine-shaft is sinking fast, the ground getting fairer as we are nearing the lode. There is a fine dropper in the shaft, carrying good tin, and I think we shall meet with the lode in the shaft; if so, we may expect a good course of ore when a junction is formed.

WHEAL VINCENT.—The men have completed casing and dividing the shaft on the south lode, and have recommenced sinking on the course of the lode, which is producing good stamps work. The stamps on this lode are also producing good work. In driving west from the shaft the lode is much improved this last week. I have set a pitch on tribute this day, on the north lode; I expect to set another next week. The weather appears to be changed, which has much increased our surface water, and, as both our stamps are at work, we shall soon get tin in the market.

FOREIGN MINES.

IMPERIAL BRAZILIAN.—*Banana, June* 28.—You cannot but be affected at learning that the married crioulas, Roque and Joanna Cacimera, his wife, came and offered to pay all their little wages for as long as was thought necessary, in order to pay for the freedom of their lately born female infant; and, I feel assured that, as they are a singularly well-behaved couple, you will not disapprove of my having freed the child without taking their money. On preparing a pit near Goldsmid's stamps, at Gongo, for receiving the jacotinga, to be hereafter washed from the back of that formation at the surface, a small quantity of matter was discovered worth stamping in a spot previously concealed; we, therefore, defer passing the stream over that place a little longer, until the stone thus found has been exhausted. At this place, the cross-cut west of Wray's shaft, in the adit level, having penetrated the jacotinga, we have stopped it, and are now driving southward towards Goldsmid's, on the most favourable vein we have seen; eastwards of Goldsmid's shaft, in the same level, we are still crossing the jacotinga, but we have discovered no vein in it, and the rock is very hard. The vein in the 7 fm. level, north of Walker's cross-cut, is small and unkindly, and the rock near it very troublesome for working. In the 14 fm. level, south of Walker's shaft, towards Thomas's, the vein is about 1 in. wide, and within two or three days it has given some very fair samples of gold. Thomas's shaft is now so much deeper than the rest of the mine, that the water has increased beyond the capability of the pumps we have hitherto used there; we have another nearly ready for use, and believe the old wheel has power to work it, but we have not fixed it, because the discovery on the Big Pump vein makes it necessary to extend the 14 fm. level in that direction, and we cannot conveniently keep the shaft, the levels, the Big Pump vein, and the Magalhaes shaft exhausted of the stone broken by one whim; and, therefore, we follow, in preference, those parts which are, and are likely soon to be, productive. Respecting the Big Pump vein, I have but little too add to the details contained in my respects of the 18th inst. We have taken about 26 lbs. of gold from a piece of vein about 1 ft. long and 10 ft. in depth; the appearances in both ends are favourable, but in both the vein is now parallel to the strata, a circumstance not generally conducive to riches here; in the bottom too, though it does not show gold in the stone, it still looks promising, but as we are within about 1½ ft. of the 14 fm. level, we are impeded by the water, and are, therefore, driving to meet the level advancing from Thomas's. We have sunk on the vein at the Magalhaes shaft about 3 fms., and from a part of it, about 1 ft. in length, we have obtained about 8 lbs. of gold; in the bottom, and in one end of the shaft, appearances are still very promising. We have had several difficulties to overcome in the adit south of Hollingsworth's shaft, and have not yet succeeded in opening it. Our discovery on the Big Pump vein is so near the bottom of the mine, that we are anxiously devising means of sinking deeper, as well at Walker's shaft as at Thomas's.

July 3.—Gongo presents nothing new—at this place we are still cross-cutting the jacotingas at Morro das Almas, but nothing valuable has yet been found. At the Corrego Preto we have penetrated the jacotinga without having found a vein, or seen an atom of gold; we have, therefore, discontinued operations there. A trial at Paracatu has been commenced, but there is nothing in sight to raise even faint hopes of success; still, as there is a large extent of unexplored ground there, we have thought it our duty to examine it. Nothing requiring observation has taken place either in the adit level near to Wray's and Goldsmid's shafts, or in the 7 fm. level north of Walker's cross-cut. We are driving the 14 fm. level northward from Thomas's shaft, and south from Walker's to meet; in both the ground is favourable, and we have had some samples of tolerable work for the stamps from both places. We continue to stope the back of the 7 fm. level, north of Thomas's shaft, to supply the stamps. The 14 fm. level, south of Thomas's shaft, has reached the sink on the Big Pump vein, of which we have broken a considerable quantity, but have obtained from it only one box of very moderate work for the washing house—the vein is at present about 3 in. wide, and now and then it shows particles of gold, and is not without some promise.

We have sunk the Magalhaes pit to within a few feet of the 6 fm. level, and have obtained about three hat-caps of work for the washing-house from it; its present appearance is not very flattering. Our side adit has reached the level south of Hollingsworth's shaft; but some days must elapse before it will be secure enough to permit us to resume extension southward. Our surface water is now rapidly diminishing, and will continue to do so for nearly three months to come. We are, therefore, unable to keep Thomas's shaft in fork below the 14 fm. level; indeed, it is doubtful whether we shall be able to keep the mine regularly drained even to that depth a month or two hence. To attempt sinking under these circumstances, would lead only to profitless embarrassment, which would distract our attention from shallower works which need attention. Since the foregoing was written, we have obtained three boxes of very inferior work from the Big Pump vein, and have included their produce in the last month's gold returns.

July 13.—At Gongo, the only matter worthy of notice is that the Joinville wheel has become so weak, that it is now frequently necessary to stop it for repair. At this place no material alteration has taken place since my last, and the only matter worthy of notice is our extension of the 14 fm. level on the Big Pump vein beneath Gibson's shaft which we intend opening to that level, to aid the drainage of Thomas's, as we dare not hope Walker's wheel will assist us much, the diminution of surface water now barely enabling it to raise the stream, which enters that shaft alone. Capts. Blamey and Pengilly accompanying my retirement, we shall take with us to Rio any gold at that time in the Treasury; and, before I again address you, our luggage will be on the way by a troop I shall dispatch to fetch any Capt. Hitchens may bring with him, and we shall ourselves be waiting only the legal quittance, which I must receive on his assuming office, in which I trust we shall find no needless delay on his part.

From Messrs. Mackey, Miller, and Co. (the agents).

Rio Janerio, July 24.—We had the pleasure yesterday of seeing Capt. J. Hitchens, who, with his party arrived safely by the *Seagull* packet, and no time shall be lost on our part to facilitate in getting their luggage through the Custom-house, and otherwise expediting that gentleman and parties departure for the mines, as requested. We take due note that Capt. Hitchens succeeds Mr. Henwood as your chief commissioner, and is also to act as chief mining agent.

GOLD REPORT.

From Gongo, from 24th to 30th June	Lbs.	4	0	10	0		
2d to 12th July		3	7	19	0	— 7 8 9	0
From Bananal, from 24th to 30th June		10	2	19	0		
2d to 12th July		3	7	1	0	—13 10 0	0
Total						21 6 9	0
Total from 1st Jan. to 30th June—Gongo		90	0	8	0		
Bananal		149	9	14	0	—239 10 2	0

ST. JOHN DEL REY MINES.—Dispatches, dated Morro Velho, 8th July last, were received yesterday, but which we are unable to give until our next Journal.—The produce for June was 21,935 oitavas; the cost, Rs. 45,816 011=4915*l.* 13s. 6d.—leaving profit, 2858*l.* 1s. 3d.

GUADALCANAL SILVER MINING ASSOCIATION.

A special general meeting of proprietors was held at the offices, Broad-street-buildings, on Wednesday last, the 12th inst., for the purpose of taking into consideration, and to determine upon the raising additional capital for the erection of dressing machinery, a steam-engine for winding, crushing, and stamping, and further developing the mines and newly-acquired pertinencias, and to authorise the directors to take all necessary steps for the purpose.

G. K. HUXLEY, Esq., in the chair.

The SECRETARY read the notice convening the meeting, and the following

DIRECTORS' REPORT.

At the half-yearly general meeting, held on 30th May, the directors laid before the shareholders their report, in which they suggested the consideration of raising additional capital, for the purposes of erecting the necessary machinery for crushing, dressing the ores, &c., and for the full development of the mines. It was, however, subsequently agreed that the recommendation should be withdrawn for the present, and that the directors should employ the capital remaining in hand in unwatering the mines, clearing the levels, and other operations requisite for bringing the mines, as far as possible, into a state of complete working. The directors, therefore, instructed their officers at the mines to proceed with all dispatch in these operations, and they have the satisfaction of informing the shareholders that the water in the Porto Rico Mine has been forked to the 72 fm. level. The amount of capital, however, which has been absorbed in carrying out the resolution, is such as to render it imperative on the directors again to bring forward the proposition for raising additional funds. In order to give the proprietors the fullest information as to the condition and prospects of the undertaking, the directors availed themselves of the services of two able mine captains, wholly unconnected with the association, who happened to be in the immediate neighbourhood, and forwarded them instructions to furnish, without delay, an accurate and impartial report of the actual state of the undertaking, irrespective of the report of the association's officers. From these reports, it is manifest that, in order to secure a complete investigation of the lower levels of the mines, a considerable further outlay will be requisite; and the directors recommend that a sum, not less than 5000*l.*, be raised, by a new issue of 2000 shares, of 5*l.* each, with the option to every holder of the existing shares to take a portion of the new stock, to the extent of one-half of his present holding, and that the sum of 2*l.* 10s. be credited by way of bonus on each of the new shares so issued and taken. By this operation, the capital stock of the company will be divided into 6000 shares instead of 4000, as at present, and a sum of 5000*l.*, payable by instalments, will be applicable to the general erection of crushing machinery and engine, the working of the mines, and pertinencias. The directors have unabated confidence in the value of the mines in their possession, feeling assured that, by judicious economical application of the capital they now propose to raise, results will ensue which will bear out all that has been anticipated, and give to the shareholders an ample and enduring profit for the capital invested.

The following is the report on the Guadalcanal Silver Mines alluded to; it is by Mr. Henry Thomas, superintendent, and Capt. M. Curry, captain, of the Linares Mines:—

Guadalcanal, Aug. 7.—In conformity with your instructions, we proceeded from Linares to this place, for the purpose of making the inspection required—having left on the 31st July, and arrived here on the 4th August. The Guadalcanal Mine is situated in clayslate—the direction of the lode being about N.N.E. and S.S.W., and dipping 1 ft. in a fathom to the N.N.W. The first part of the mine examined by us was the 17 fathom level, extending from a little south of Pozo Azuaga to 28 fms. north of Pozo Antonio—being the extent to which the level is yet cleared in the direction of Pozo Rico. The old men have driven south of Pozo Azuaga 5 fms.; and in this end the lode is split into branches, and unproductive. A cross-cut has also been driven west 5 fms., and three other small branches intersected—one containing mundic, with quartz, at present also unproductive; the end south is now resumed, driving on the most promising branch, though, from the old men's level being 2 fms. above the plat in the 17 fm. level, it has been found necessary to commence a new level under this, in order to gain the greatest possible depth in extending the level south, under some promising ground, about 40 to 50 fms. distant, which has been costeaned, and several kindly branches with gossan intersected, and which can be well proved by this level, or by cross-cuts therefrom. The 17 fm. level, between Pozo Azuaga and San Antonio, was driven by the old men apparently on a soft flookany lode, occasionally with calcareous spar, and now closely timbered up for several fathoms. We examined the same level, north of San Antonio, for 28 fms., and found the men engaged in removing the old waste from the end, which prevented our seeing the lode in the breast; this level is not yet communicated with that driven south from Pozo Rico—a short distance, however, only remaining. In the back of the level we found the lode very kindly, varying from 9 to 18 in. wide, with calcareous spar, quartz, and a soft talcose substance, and, near the present end, showing some spots of silver ore; the ground is not worked except for a short distance in one place only, indicated by the timber remaining in the back of the level; near the present end it is proposed to sink a winze to the 22 fm. level; and, as the appearance of the lode is more favourable about this spot than elsewhere in the level, we fully concur in this plan; two cross-courses are intersected by this level, 8 fms. apart, underlaying west 2½ ft. in a fm., and on the most southern a level has been driven east for 90 fms.; the end being full of stuff, we could not ascertain if any lode had been cut at that point; the other part of the cross-cut presented nothing worthy of notice.

It is proper to remark, that much work has been done in the above shaft and level by the present company, it being found necessary to drive the level for several fathoms, to communicate between Pozo Azuaga and San Antonio, and also to slope the old level for the purpose of draining the former, that the south driving might be resumed. The shaft has has also been collared up, a plat cut, and whim erected. The Pozo Rico shaft is sunk perpendicularly to the 30 fm. level, on which level we have to report that it is communicated south to San Antonio diagonal shaft by the present adventurers; and in driving through this piece of ground the lode was found to be large (from 1½ to 3 ft. wide), and to contain calcareous spar, with occasional bunches of rich grey silver ore, for about 10 fms. to 12 fms. in length. From the back and bottom of this level there is every prospect of a considerable quantity being raised. We find it difficult to estimate the value of this ore, the pile raised not being dressed; but what has been raised from driving the level may be expected to produce about two tons of dressed ore, the produce of which is stated at 500 oz. per ton. The nearest approximation of value that we can form would give about 20*l.* per fm. for this length of ground, though some parts are far richer, and others less so. A winze is commenced sinking below this level, in which no lode has yet been taken down. Both north and south of the piece of ground above referred to, there are considerable workings by the old adventurers, no doubt producing to them large quantities of valuable mineral. The San Antonio shaft has been sunk perpendicularly to a little below the 22 fm. level, about which there appear also to have been large workings. With regard to the importance of this shaft, in connexion with future operations, we shall have to remark hereafter. The 30 fm. level is driven north of Pozo Rico on the course of the lode for 90 fms., to within a few fms. of Pozo Marmolitos. The lode, throughout, is from 18 in. to 2 ft. wide, with very regular walls, composed chiefly of calcareous spar, and with a small flookan, but unproductive of ore. A branch falls in with the lode a few fms. behind the end, and several fms. have been driven on it; this branch will, probably, again regain the lode. Two winzes have been sunk in the bottom of this level, one to the 43 fm. level, and the other for a part of the distance only. The 43 fm. level is driven south of Pozo Rico to 15 or 20 fms. south of San Antonio winze; a run having occurred, prevented our seeing the lode in the end. In the back of the level it is composed mainly of carbonate of lime, with quartz and talcose slate, and is but little worked by the men of old. We could not get into the 43 fm. level north, but were informed by Captain Michell that the lode bore a similar character to that in the level above.

The 52 fathom level has been cleared to San Antonio winze, and is now being further cleared south; the lode is regular, with well-defined walls, and composed of the same substances as in the level above, varied with occasional spots of grey silver ore; it is very little worked in the back, most towards the end; in size it is from 1 to 2 ft. The 52 fm. level north has not been cleared, nor has it been examined in the present working. The 62 fm. level we found partially unwatered, though not sufficiently clear to permit us to examine it beyond the winze we descended through. About 10 or 12 ft. from the bottom of this winze, through which the pumps are brought down from the 52, is the top of another winze, in which the pumps will be dropped for further unwatering the mine, and which appears to have been used for the same purpose by former parties, the timber still remaining on which their rods and pullies worked, and again applicable. We beg further to remark, that we carefully examined the lode in the ends of the winzes in descending, which we found to partake of the same character as above described, and generally very kindly, though not productive of silver ore. Having thus minutely stated the appearances of the mine, so far as the present state of the drainage will allow us to observe them, we have next to remark that, from the general character of the lode, and the extent of the bunches apparently worked away, particularly about the 30, 22, and 17 fm. levels and from the fact of the old section indicating the existence of more extensive workings, on ore ground, in the 70, 80, and 90 fm. levels, than at the 42, 53, and 62, we are led strongly to recommend your continuance of the drainage of the mine as rapidly and effectively as possible. In order, however, to accomplish this, and to carry out the works dependent thereon, we beg to draw your attention most strongly to one important circumstance—viz., that the deepest drawing shaft (Pozo Rico) at present in the mine is no deeper than 30 fms., and that the further removal of the waste or ore from the lower parts of the mine must be by the use of much manual labour through the various winzes, at an enormous expense and loss of time. Considering this matter fully, and looking at the fact that the San Antonio shaft is sunk already perpendicularly nearly to the 30 fm. level, and that its direction downwards would bring it into the chief ore ground indicated in the plan, we strongly urge the resumption of the sinking this shaft, to be carried down on the course of the lode, and which may, probably, be also risen against from the lower levels, so as to diminish much of the time of its ultimate completion. Should the mine, on its being unwatered, prove rich, it will not be practicable to make its riches available without this, or other similar means of sending the ore to the surface; nor, if otherwise, will it be possible, by the sinking and extension of the levels, to do what is necessary for the proper proving the mine.

Not knowing what condition the lower levels and winzes may be in, we can only form an approximate estimate of the time when the mine may be unwatered, we, therefore, offer an imperfect opinion that this result may be expected in eight months. The state in which the mine may then be found must guide the future operations; but it is most probable that, during such operations, and perhaps before the mine is fully drained, much silver ore may be met with, and returns made, in addition to what may be raised from the 30 fm. level. At the time specified (eight months), the San Antonio shaft may, probably, be sunk to the 60 fm. level, and will have proved, by being sunk on the lode, a promising piece of ground, and will permit the extension south of the levels, if found productive, as well as contributing to the relief and diminution of expense in drawing from the deeper levels. We beg to remark, in conclusion, that the mode pursued in fixing the pitwork and unwatering the mine, appears to be the best that, under the circumstances, could have been adopted, and that the working of the mine generally has been conducted with ability and judgment, and with a due regard to economy.

P.S. The quantity of coals on the mine is, probably, equal to another year's consumption.

A report was also read from Mr. Duncan Shaw (the superintendent) and Capt. Michell, which corroborated the foregoing; they estimate that it will take to the end of the year completely to fork the water, and four months of the next year to clear up and extend the levels a few fathoms for a fair trial, the monthly costs during which period are not expected to exceed the average of the last four months—400*l.* per month. The quantity of ore in sight is estimated at 1000*l.*

The CHAIRMAN said that, in addition to the monthly cost, they had paid the Spanish Company the first instalment of the purchase-money, 700*l.*, and had in hand about 700*l.*, which was, however, virtually pledged to them for the second payment, leaving very little in hand; while it was a convincing proof of the confidence the directors had in the undertaking, that they were already under liabilities for upwards of 2000*l.*

Mr. UZIELLI wished to know, in the event of the shares not being taken up, what course the directors intended to pursue, as, if 5000*l.* were wanted, it would be useless to throw away a smaller sum, which would not effect the object?

The CHAIRMAN was not prepared for such a result, as he had not the slightest doubt but that they would be all taken.

Some conversation arose on this point; Mr. LA'MERT thought, if it was known that the directors were large holders, there would be more confidence, and the whole of the money would be forthcoming; on which he was informed that the board held upwards of 1500 shares, which appeared to give satisfaction.

Mr. DUNCAN, to meet Mr. Uzielli's objection, suggested that authority should be given to the directors to proceed, if a certain proportion of shares were taken, to which Mr. Uzielli consented.

The report was then received and adopted; and it was resolved, that 2000 new shares be issued, agreeably with the recommendation in the directors' report; and that, on taking up the shares on or before the 28th Sept., and paying the first instalment of 10s., credit should be given the holder for 3*l.* paid—the other four instalments of 10s. each to be paid on Nov. 1st, Jan. 1st, March 1st, and May 1st. Each shareholder may take one for every two original shares held by him; and the directors are authorised to proceed on 1250 shares being allotted, and the first instalment paid. (For the series of resolutions, see our advertising columns.)—A vote of thanks to the chairman and directors was then passed, and the meeting separated.

WHEAL ANDERTON MINING COMPANY.

At a meeting of adventurers, held at the Bedford Hotel, Tavistock, on the 6th instant, the accounts were examined and passed, showing—Labour cost, April, May, and June, 489*l.* 2s. 7d.; carriage, discount, &c., 34*l.* 19s. 8d.; merchants' bills, 185*l.* 13s. 1d.; lords' dues, 33*l.* 0s. 10d.; sundries, 29*l.* 0s. 2d.—771*l.* 16s. 4d.—By balance last account, 669*l.* 14s. 4d.; arrears of calls, 20*l.*; ores sold, less credit, 27th June (390*l.*), 53*l.* 14s. 4d.; sundries, 9s. 4d.: leaving balance due purser, 27*l.* 18s. 4d.—It was resolved, that the meeting should be adjourned to the 20th Sept., to elect a clerk; and that Capt. Carpenter do advertise in the *Mining Journal* for one.—A call of 50s. per share was made, and the following gentlemen appointed auditors for the ensuing three months:—Messrs. W. Radford, J. E. Mare, Henry Seaman, John Paull, and Frederick Marshal.—The following report, from Capt. Carpenter, was read:—

Sept. 6.—I cannot see any improvement in the quality of the lode in the 90 fm. level since my last report, although it continues regular and large, but yielding a very small quantity of ore; to ascertain its properties under the 90, we have sunk on its course 7 ft., and found the character of the lode just the same—therefore, I have suspended sinking; as the water is an impediment; and should we make discoveries in extending the level east or west, the engine-shaft will be sunk, and backs stoped at less expense. I am pleased to inform you, that there is a very good discovery in the 80 fm. level, almost at the westernmost part of our workings, which corresponds with what was seen in the 40 and 70 fm. levels over this place; therefore, we may reasonably expect a great deal of tin from this part of the mine, when the level is extended a little further, so as to be in a fair position to break down the back; the lode is from 4 to 5 ft. wide, carrying a leader of good tinwork on the north wall, 15 in. big. We have no lode yet in the 80 level east; but I think we have now got through the cross-course, or confused piece of ground, as the end is composed of killas, without the appearance of flookan, as heretofore. We have also discovered the different lodes at surface, four in number, nearly parallel to each other; the two north ones have formed a junction between the surface and our present 80 fm. level, which will I expect be soon seen in driving north a few fathoms; as the south lode of these two mentioned underlays north, and the north one south, when intersected, it will be a main feature in our future prospects, as well as the object we have in view of cross-cutting south, to cut the two south lodes, which also underlay north towards our workings; therefore, I consider it to be a very good speculation, now the shaft is down, and levels driven forward, nearly opposite the points of demarkation, independent of western ground that produces the tin. I should recommend five levels to be driven—The 90 east and west, the 80 west and north-east, to cut the two first-mentioned lodes, and, when intersected, to drive south to see the latter two south lodes, and the 60 east for ventilation, and to prove the lodes. We shall extract what ore we can from the backs, to reimburse the greatest part of the expenditure which will necessarily be required to prosecute the work, having a good chance to get ore from the ends, to give us, I hope, a surplus above the expenses; however, these things are to be taken as ulterior measures. Having availed ourselves of every advantage of the little water that we have after its being used for condensing, &c., we have cleaned a sufficient quantity of ore, which we are now calcining, and which will be ready in a few days for market, to pay the July cost; and had we sufficient surface water to carry out the dressing operations, the few hundreds of pounds worth of ore (about 500*l.*) we have at surface to clean, would have been in such a forward state as to have made a good sampling, equal to our last sent, at the commencement of the long drought.

NORTH ROSKEAR.—At a meeting of adventurers, held on the 11th inst., the accounts presented, showed—By ore sold, 4163*l.* 18s. 4d.—Cost for June and July, 4119*l.* 18s. 8d.: balance, 43*l.* 19s.; in bankers hands to the end of May, 2632*l.* 19s. 8d.=2676*l.* 19s. 4d.—By dividend of 3*l.* per share, 420*l.*—leaves now in hand, 2256*l.* 19s. 4d.

THE BIRCH TOR AND VITIFER MINES have been for a considerable time regarded by the tinners of the east of Cornwall, and west of Devon, with so deep an interest, that some little notice of the undertaking cannot be unacceptable to the mining world. The immense surface operations prove that this mine in past ages was very extensively wrought for tin; and tradition says that, out of these artificial valleys, the ancient Britons raised their tin to supply the Phœnician trade; but this is, of course, mere conjecture. The ancient excavations, three in number, are on the course of the lodes, and extend in length more than a mile and a half—being in some places, notwithstanding the quantity of ground which must have fallen in by the lapse of ages, from 70 to 90 ft. deep, and exceeding 200 ft. wide. One of these, the Birch Tor lode, on which the least work had been done at surface, has been prosecuted to the depth of 75 fms.; and after returning a very large profit to the adventurers, was, from causes to which it is unnecessary here to refer, abandoned. The Old Vitifer lode, on which an incredible amount of work had been done at surface, and to prosecute which, for 10 fms. only, it was deemed worth while to bring up an adit exceeding a mile, has not been, until within the last six months, seen under that depth. The question of interest to the miner was, did the ancient tinner bestow all this labour on an unproductive lode? This question is being satisfactorily answered. A shaft has been sunk on this lode 20 fms. below the adit, with the exception of about 6 feet, through a rich lode; the level has been extended west about 25fms., also through a good course of tin, and eastward through the cross-course, where the lode, as soon as it got out of the influence of the cross-course, became very productive. This tends to prove that the surface workings of the ancients are a safe guide, when the cause of their not following the lode in depth is clearly the want of mechanical power for that purpose. The Birch Tor lode is also productive under the old workings in the eastern part; and it may be fairly assumed that the fortunate shareholders will find, when they shall have intersected their north lode by the cross-cut, now being driven, that the immense workings on its back are, as in the case of the Old Vitifer lode—only an index to the mineral wealth beneath. This has been an undertaking carried out in a miner-like way in the midst of the greatest of difficulties, on the faith of the great surface workings; and it is not too much to say that the effort has been crowned with success.

OLD BRIMPTS TIN MINE.—We inserted a notice of the intended re-working of this mine by a company in our columns of the 1st inst., in which "John" was inadvertantly substituted for Mr. Jehu Hitchins. We are informed that the real value of the mine is so well known in Tavistock and its locality, and from its possessing such great facilities for working, and requiring so small an outlay for a sett of such magnitude, that very few shares are unallotted, and none will be issued after the 27th inst., when the mine will be immediately set to work, and great expectations are entertained of the results.

IMPROVED WINDOW SASHES FOR LUNATIC ASYLUMS, &c.—Mr. Thomas Melling, of the Rainhill Iron-works, near Liverpool, has taken out a patent for a new arrangement of apparatus for window sashes, in lieu of sash weights and pulleys, by which an ample space is open for ventilation; while the possibility of escape through such opening, or persons entering from without, is precluded. A rack is fastened on the inside of each outer rail of the upper sash, and also on the outside of the lower one. A shaft crosses the centre of the window frame between the two sashes, at each end of which is fixed a pinion, which takes into the two pairs of racks, by which arrangement, on raising the lower sash by the action of the racks and pinions, the upper one is lowered to the same extent, and, according to the length of the rack, the spaces for the admission of air may be regulated to any width required. This description of window appears to us to be peculiarly applicable to lunatic asylums, hospitals, prisons, &c., from the facility with which a thorough current of air through top and bottom of the sash is secured; while the objectionable practice of throwing windows wide open in such establishments is avoided. For lunatic asylums, in particular, they seem peculiarly appropriate.

DRAINAGE OF THE HAARLEM LAKE.—An Amsterdam letter of the 3d inst. states, that the difficult operation of draining the sea or lake of Haarlem is being carried on with the greatest activity. The works are not even suspended on Sundays or *fete* days; nay, they are sometimes continued during the night. During the month of August the waters of this immense lake were lowered to the extent of 27¾ inches, Dutch measure. It is hoped and expected that they will be entirely drained off before the month of March, 1850.

GOLD FROM CALIFORNIA.—Dr. George Charles Hay, of Brechin, has returned from California, where he has resided for several years. Dr. H. left San Francisco on the 12th of April last, in the U.S. steam-ship *Oregon*, the first steamer that has made the passage from the region of gold to the Isthmus of Panama. He brought over specimens of the produce of the diggings, and has presented a portion to the Museum of the Mechanics' Institute. The samples presented are several ounces in weight, evidently very pure, and consist of a piece embedded in rock, and a quantity in the form of flakes or scales. The former was picked out of the cleft of a rock in the dry diggings, by a man whose only instrument to labour with was a butcher's knife: the other was obtained by washing on the River Stanislaus, a branch of the San Joaquim. The doctor represents the Stanislaus diggings as about the richest, many having made from $50 to $100 a day; and some few favoured sons of fortune as much as $300; and, in two instances, as much as $510 and $630 per day.—*Montrose paper.*

GOLD MINES AND GOLD WASHING IN CENTRAL AMERICA.—In some of the districts in central America there are remains of rather extensive gold and silver mines, and one or two of cinnibar; they are generally, contrary to the the case in copper ore, combined with a large proportion of sulphur, and are invariably so hard, that it is wonderful how much has been done without gunpowder, for there is not a single mark of a blast. They have been abandoned for ages, and it will be long, very long, ere they are worked once more. The difficulty of finding a pair of grinding stones, and renewing them when worn; cutting them, transporting them through trackless forests, and making a mill to turn them; together with the want of quicksilver, and the treachery of the Government, would prove too much for the most enterprising; but there is a fair quantity of gold collected in Central America, although in such a way that it does not speak much for the industry of the upper and middle classes, who might organise a better mode of working. Some adventurers, generally of the very lowest class, both in manners and morals, proceed to the auriferous streams, that run through the south part of the Honduras, nearest to Segovia, for two or three months during the dryest part of the year, and when the rains have entirely subsided. Their baggage is very light, and easily carried on a donkey or half-starved mule, for they only provide each for himself and his female helpmate, a small load of Indian corn, barely sufficient for the pair; some tobacco, a small stone for grinding the corn, an earthen pan or two, a hatchet, and a small leathern bag to put the gold in when found. They also take a few half gourds dried, to wash the earth in, and a grass hammock to sleep in, and away they start driving their animals before them, each man carrying his machete, or short heavy broad sword, and some bows and arrows. The part of the country is almost uninhabited, and, on their arrival at the different streams, they generally separate, and each pair chooses a spot, often miles apart, where they commence operations. The first thing is to build a "ramada," or hut of branches, as the name signifies; but they always select a place where two good sized trees are near enough together, to enable them to swing their hammocks between them. With a few poles and branches with the leaf on, a hut is made in two or three hours; the man then makes a pile of dry wood near at hand, and leaves the entire care of the household to the woman, who grinds the corn, and every day makes a few cakes, looking like thin pancakes, which are toasted on a flat earthen pan over the wood ashes. Their drink is a little maize meal and cacao nut ground together, mixed with water and stirred up in a gourd; and thus the pair vegetate for two or three months, supported by the hopes of living well for remainder of years. The man is always within sight of the hut, in case assistance be wanted in such a wild spot; and he digs holes into the ground near the stream, and after having piled up a heap of earth close to the water, washes it in the half gourds, when, after repeated changes of water, and the spot chosen having proved a good one, a little fine gold dust is often visible in the gourd. It requires a great deal of nicety to balance the gourd backwards and forwards, up and down, and round about, so as to get rid of the earth: and it is still more difficult at the last washing, to manage to leave the gold altogether, at the very end of the remaining deposit, which is generally of a black or dark grey colour.—*Dyson's Wild Life in the Interior of Central America.*

NORTH BRITISH AUSTRALASIAN COMPANY.—It is stated that the Crown has succeeded in action against this company, with regard to the grant of the island of Kaw-aw. If this be the case, we presume the company have the right of appeal to the Privy Council or the Colonial Office, but we fear it will be of little avail.

UNITED MEXICAN MINING ASSOCIATION.—We understand that the directors of this company are endeavouring to get an arrangement with the Mexican Government for a liquidation of their Zacatecas claims, and, with a view of obtaining the proper attention of the authorities on the subject, a communication has been addressed to Lord Palmerston. The answer received to this letter is, so far as it goes, satisfactory, inasmuch as Mr. Addington says he is "directed to state that an instruction has been sent to Mr. Doyle, Her Majesty's Chargé d'Affaires in Mexico, desiring him again to press upon the Mexican Government the claims of certain British subjects residing at Zacatecas, on account of the exaction of a forced contribution under the Mexican decree of June 17, 1847."

BANWEN IRON COMPANY—WINDING UP.—On the 16th June last, the petition of Mr. Edward Needham, one of the shareholders, praying for the winding up of this company, was presented to his Honour Vice-Chancellor Knight Bruce; and upon a full hearing of the allegations contained in the petition, his honour expressed his opinion in concurrence with the petitioner, and signed the order for the winding up, and referred the petition to Master Kinderaley, for that purpose. Tuesday was fixed for the appointment of an official manager, and the following candidates presented themselves:—Mr. William Charles Wryghte, who was proposed by Messrs. Vallance and Vallance, Essex-street, Strand, who put in several affidavits, corroborative of this gentleman's fitness and competency for the office, and stating that he had already been appointed official manager of several other companies, the winding up of which he had accomplished to the entire satisfaction of all parties concerned.—Messrs. Vallance, who appeared on behalf of several shareholders, supported the statements contained in the affidavits in favour of the appointment of Mr. Wryghte.—Messrs. Bristow and Tarrant, solicitors on behalf of the petitioner, proposed the appointment of Mr. Henry Adron, of Coleman-street, and also handed in several affidavits as to his competency, &c. The other two candidates were Mr. Robert Webster, Sergeant's Inn, proposed by Messrs. Yarboro and Wilkinson, and Mr. A. Branston Smith, of Percy-street, Bedford-square, proposed by Mr. Tarleton.—The Master said he would take time to consider which of the candidates he would appoint, and adjourned the court to Tuesday next.

IRON TRADE.—At a recent meeting of the Glasgow River Trust, it was stated that, not many years since, there was not such a thing as bar-iron exported from the Clyde, afterwards it was only in small quantities, consigned to foreign houses; but for the month of last June, 13,000 tons of pig iron, and 4269 tons of bar and wrought-iron were exported, while the quantity brought in was only 226 tons. Formerly, vessels used to come to the Clyde from England and Wales, bringing the above-mentioned articles in ship-loads; but now, the iron merchants could not only manufacture sufficient for their own use, and for the West of Scotland, but could export 4000 tons.

IRON ROOFING.—At the Liverpool Polytechnic Society, Mr. R. Turner, of Dublin, furnished the following interesting particulars of a new galvanized iron roofing and other works of a railway station at Liverpool, which he is now constructing. The roof covers an area of 6140 square yards, being about 360 feet in length, and 153 feet 6 inches in width. There are no intermediate columns; but this great space is spanned over by one stupendous arch, rising in a segment of a circle to a central height of 30 feet from the spring, or cord. The roof consists of 17 curved girders of wrought-iron, resting at one side upon the walls of the offices, and at the other upon cast-iron columns of the Doric order, connected by ornamental arches in perforated iron. These girders are trussed vertically by a series of radiating struts, acted upon by tie-bars, connected with the extremities of the girders; and they are trussed horizontally by a series of purlins and diagonal rods—thus forming one rigid piece of framing from end to end. Upon this framing will be laid plates of galvanised corrugated iron, and three ranges of plate-glass, in sheets about 12 feet 6 inches in length, and of great thickness, extending the whole length of the roof. In consequence of the great extent of surface exposed to the variations of temperature, provision has been made for expansion and contraction of the iron without injury to its bearings. The roof, when finished, will weigh about 700 tons. The whole of the work, with the exception of the cast-iron columns and ornamental arches, is of wrought-iron. The iron columns upon which the roof rests, on the south side of the yard, are 2 feet 3 inches in diameter at their bases. Six of the girders are fixed; and having, on yesterday week, struck the centres under three of these girders, it was found that in not one of them was there the least perceptible deflection. Mr. Turner produced specimens of the various parts of the ironwork employed in the roof in question, and explained the manner in which they were applied, so as to make a perfect whole. Though these samples are very massive, it was stated that the huge roof, though of great strength, would appear to the eye as light as cobweb.

HENNOCK STEEL, IRON, AND TIN MINES.—The Hennock Silver-Lead Company, briefly noticed in our last, it is necessary to state, is a distinct company from the above, having, as we observed in a former Number, been most successful in their experiments in smelting the iron ore; and, independently of the almost inexhaustible lodes of iron of first-rate quality for steel, there will be found, according to the opinion of Capt. Prince, large quantities of tin. He says—"I have seen similar beds of iron in the Birch Tor and other mines, the lodes of which traverse a granite formation, and have been found very productive of tin. Tin will, no doubt, be found the predominating metal of these mines in depth, although there is sufficient iron on the backs of the lodes to pay a good profit above the cost of their proper development."

BRITON FERRY IRON-WORKS.—We are glad to hear that these extensive bar and sheet-iron rolling-mills are again in operation—having passed into the hands of the son of one of our old Glamorganshire ironmasters, who has also purchased the blast-furnaces at Cefn and Garth, in this county. We anticipate much good may arise, both to the resident proprietor, Mr. Henry Scale, and his workmen, to say nothing of what must inevitably follow—an advantage to the neighbourhood. The works were started by the proprietor at 6 a.m. on Monday last, who, in the course of the day, addressed his workmen, reminding them that, "as head and members of one body," success depended upon unity of action. The workmen seemed not a little proud that "one of themselves, a Welshman and practical ironmaster, was come to live among them. All we can say is, that we trust the *scale* of wages and prices may be henceforth an upward sliding scale from the present standard. We are informed, also, that Messrs. Nash, Cole, and Elton, iron merchants, in Bristol, contemplate opening a commission-house, a branch of their Bristol House, at Neath, in connection with the Briton Ferry Works. The quality of iron made at these works will, under the new management, do away with the necessity for the importations of plate or bar-iron from Staffordshire in future.—*Cambrian.*

PREPARATION OF THE PURPLE POWDER OF CASSIUS.—BY M. FIGUIER.—Dissolve 300 grains of gold in five times their weight of aqua regia, prepared from four parts of hydrochloric acid, and one part of nitric acid; evaporate the solution almost to dryness; this evaporation is requisite to get rid of the acid. The chloride of gold, being re-dissolved in water and filtered, the solution is to be diluted till it measures 26 ounces. Fragments of granulated tin are then to be put into it, which becomes turbid and brown in a few minutes; its tint gradually becomes deeper, and, at the end of a quarter of an hour, it assumes a fine purple colour; the precipitate is deposited, and it remains only to collect it on a filter. It sometimes happens, and especially when large quantities are operated on, that the precipitate does not separate, but remains in the liquid, to which it gives a deep purple colour; in this case, it is merely requisite to heat the liquid slightly, and to add a little common salt, the product then immediately separates. When the liquid holding the purple powder in suspension is decanted, to separate the excess of metallic tin which remains at the bottom of the vessel, in the state of a black powder, the liquid is carefully poured from it; it is proper to allow the liquor to settle for some time, and afterwards to decant it. This operation should be repeated three or four times. —*Trans. Paris Academy of Sciences: Patent Journal.*

FRICTIONAL ELECTRICITY—BY M. BECQUEREL.—From the facts observed by M. Peltier, it follows that pressure and swiftness are uninfluential on the effects produced, and that the quantity of electricity is in proportion to the swiftness, whatever the pressure is. In the explanation which this philosopher has given of facts observed, he has deducted the electricity, which recombines at the very source where it is liberated, when no obstacle to this recomposition is present. It is for want of having made allowance for this recomposition, that other persons have been equally led into error in the explanations they have given of the phenomena produced in the liberation of electricity by friction; in fact, the following considerations ought never to be lost sight of:—1st. When the decomposition of the two electricities by friction is brought about more rapidly than the recomposition, the electric tension increases.—2d. If the recomposition is made in an appreciable space of time, the faster we turn the higher will the maximum tension arise. It is very evident that, when we turn rapidly, a certain point is attained at which the tension of the liberated electricity is such that a portion of the two electricities combine, notwithstanding the bad conductibility of the bodies rubbed; the same will be the case in proportion as the intensity increases. Hence, there must be a certain maximum intensity which cannot be passed, seeing that the two electricities always recombine on contact, the friction being so instantaneous, that the separation of the two bodies can be effected in an infinitely small space of time; whence we may comprehend that the disengagement of electricity is independent of the pressure and of the swiftness of the friction.—*Ibid.*

*** The following Mining Reports reached us too late to be inserted under the proper heading:—

CARTHEW CONSOLS.—At the upper mine, since my last, we have forked the water, and cleared the engine-shaft to the 55 fathom level, which we find, north and south, to be entirely filled with stuff. In clearing the 48 fm. level south, from the discovery of a very good lode in the back of lead and copper (principally in the former), a fresh instre has been added to our very cheering prospects in this mine. At no other point, either in tutwork or tribute, do I find any alteration of moment; but these departments continue much as last reported. At the lower mine things may be noticed just as last week.

EXMOOR WHEAL ELIZA.—Agreeable to your request, I have visited the above mine, for the purpose of examining the past and present workings, together with the prospects in view. In handing you my report, I beg to say my attention was first directed to the new works connected with the engine-wheel, which now runs very steady, and had there been a short wood rod attached to the crank, to take the set off near that place, the work would be more satisfactory, but the present may answer. Since my last visit, the cross-cut in the 12 fm. level has been driven north; in doing so the level passes through the middle lode, from 3 to 4 ft. wide, composed chiefly of gossan and some specks of copper. About 10 fms. north of the shaft, the north lode was intersected, being about 7 ft. wide, composed of gossan and mundic, spotted with copper. The shaft has been sunk to the 24, the middle (or what was before called the caunter) lode being met with near the shaft; the end is driven west on its course about 6 fms., through a large and more than ordinary lode, varying in size from 4 to 9 ft., composed of gossan, impregnated with copper. I would recommend sinking as soon as possible the engine-shaft 12 fms.; this I think will unbottom the gossan, when I believe a large course of copper will be met with going down between two slides, about 10 fms. apart east and west. North of the middle lode a cross-cut has been driven to intersect the great north lode; in doing this many branches are met with, producing fine stones of copper—these branches will form a junction with the north lode, about 3 or 4 fms. east, and is very likely to make an improvement. The north lode in this level, going east, is about 4 ft. wide, composed of mundic, spar, and some copper. I would recommend this level to be driven with all possible speed, by six men and boys, giving them long stents and a moderate price for the ground, with a small tribute for copper saved; this end ought to be driven at least 90 fms. east, where the north lode forms a junction with the middle lode. Judging from the appearance of the large gossan lodes seen at the surface, and also in the 12 fm. level, I have every reason to believe we may expect a course of copper shortly, as we are under the gossan, and find the lode more regular and in a more settled state. It is said, "mundic rides a good horse," and, from appearances, I am confident this will be realised. I would also recommend the cross-cut to be driven south by 4 or 6 men and boys to cut the south lode, which produced such splendid stones of copper in the 12 fm. level; in doing this, the end will pass through those branches seen in the level above, south of the shaft. I need not tell you the progress in this mine has been very slow, and reasons are obvious; but, by the arrangements entered into at the last meeting, a greater facility will be accomplished, and the adventurers benefitted by the change. Had this mine been in the neighbourhood of Tavistock, and in the hands of some gentlemen, 100*l.* would not purchase a share; and had it been worked with the spirit it deserves, large returns of copper would be the result, and stand in the list of one of the first returning mines in the kingdom.

WHEAL PENHALE.—The ground in the engine-shaft still continues in opposition to our speedy sinking, but in it we have, from appearances, two distinct lodes, one of which is carrying copper, and the other lead, and are now apart about 6 ft., which intervention causes us to give up pursuit of the latter in sinking; it will remain in whole now until we attain the 30 fm. level, when we shall again work it by means of a cross-cut; the former (or copper) lode yields very good work. From the ends in the 20 fm. level being worked each by four men only, no great change can be expected in a week, nor do I, in fact, see any alteration worth noticing. The lode in the north winze in the 10 fathom level, is improved this week, and the south one continues to yield good work for lead. The tribute pitches continue to yield their usual quantum of ore, and their general character and appearances are similar to what has of late been reported.

Amongst the imports at Liverpool last week, were 100 pigs of copper, by the ship *Ashburton*, from New York.

By papers from the Cape of Good Hope, we learn that the mining interests of Port Elizabeth appear to be progressing favourably. At the Maitland Mines a great number of superior specimens of the blue and green carbonate of copper, as well as galena, had been dug up near the surface. At the Ferreira Mine, the indications of ore were chiefly those of lead, with an occasional spot of copper. The former mine is situated from Port Elizabeth about 18 miles, and the latter 16 miles. Timber and wood abound in the vicinity of each; and the chief drawback to the proprietors at present is the difficulty of procuring labourers having a practical knowledge of the work required. A large tract of the country is believed to abound in mineral wealth. Iron and manganese are traced in abundance; and courses of quartz, cropping up above-ground, are visible in various directions.

NOBLE EXAMPLE TO EMPLOYERS.—In the *Mining Journal* of Sept. 9, 1848, we noticed a dinner given to his workpeople by the Hon. T. Pemberton Leigh, of Hindley, near Wigan, at which he informed them that, on the following Monday, he should deposit 2*l.* in the Wigan Savings' Bank to every man, as the commencement of a fund to induce them to save small sums. As a further encouragement, he promised, at the year's end, to double any sum which they might save—thus, if a man saved 5*s.*, he would add 10*s.*; if he saved 20*s.*, he would add 2*l.*, which would thus make him the possessor of 5*l.* The usual annual dinner to his men and their families was given at the commencement of last week, when it was announced that there was not an individual who had been in constant work for Mr. Pemberton Leigh during the year but who now had 5*l.* against his name in the savings' bank ledger. This is a convincing proof that, when once a fund, however small, is formed, a habit of saving is created to add to it, and a corresponding avoidance of the beer and gin shop. Few establishments in the kingdom can boast such a circumstance, as every man on them being in possession of 5*l.* to the good; it shows a noble and philanthropic spirit in the worthy proprietor; and happy should we be to see so glorious an example followed up by other wealthy individuals.

THE FRENCH NAVY.—The Minister of France has made his report on the present state of the French Navy, and very great improvements are to be made in the steamers, the machinery of many of them being of a description that would be of very little service in case of being called suddenly to sea. It appears that several English engineers have received orders, and entered into contracts for supplying new boilers, and the requisite machinery, to be constructed in France, but the material to be allowed being imported from England. A great alteration is likewise about to be made in the import duty of English coals into France—to be the same impost as those from Belgium.

THE BRITANNIA TUBULAR BRIDGE.—Active preparations are being made at the Menai Straits connected with the renewed attempts at raising the tube to its permanent level, a process looked forward to with considerable anxiety, in consequence of the late misadventure. The new cylinder intended to replace the one that sprung, was cast on Saturday. It has to be a week in sand, to get annealed, by which process it will become toughened. Every precaution has been taken, and the most improved method of casting has been adopted, so as to confer all additional security. Some modifications have been carried out by the engineers, Messrs. Easton and Amos, in the bottom of the press, to counteract the effect of contraction in such large masses of metal, and which is believed to have been the superinducing cause of the bursting of the first cylinder. When in perfect readiness, the new cylinder will be shipped on board a steamer direct to the Straits. It will be a machine of prodigious power, of cast-iron, in one piece of from 16 to 20 tons weight, and capable of sustaining a pressure of 8000 or 10,000 lbs. on the inch. Since the accident, last month, the whole range of the scaffolding and all the immense machinery have received such a superabundance of strength for the next trial that any recurrence of the recent casualty is looked upon as improbable. Precautions have also been taken by Mr. Stephenson to guard against any future damage, either to the tube or those who will be engaged in raising it, seeing that, in addition to the loss of life that occurred on the last occasion, Mr. E. Clark, the acting engineer, who was standing on one of the cross-heads of the press, had a narrow escape, being suddenly thrown on to the boiler in the engine-room. The tube is now raised about one-quarter of what will be its actual ultimate elevation, and is resting 25 feet above high water. It has subsequently to be hauled up 75 feet higher; and it is expected that in 12 days from the commencement of operations it will attain its proper level. A great many persons of note have been to see the tubes and stupendous works—among them the Marquis of Anglesea, Lord John Russell, Lord Paget, Mr. Milner Gibson, M.P., and Sir John Burgoyne. The propositions that have recently been made of lifting the huge fabric by means of pontoons, tide raised, and bearing up the tube on suitable scaffolding, are by no means new or unthought of. They would work well in a model; but would be quite impracticable, for many reasons, on the scale required.

HIGH RAILWAY SPEED.—Within the last few days, one of the large engines on the Great Western Railway took a load of 170 tons down a portion of the line, with a falling gradient of only 4 ft., at a rate of 65 miles an hour; and one of Wilson's engines, with a 6 ft. 6 in. driving-wheel, on the Midland Railway, with the usual passenger train, the precise weight of which we have not been able to ascertain, attained a speed of 60 miles an hour. In each case the speed was correctly timed by one of Chas. Frodsham's watches with split-second hands—the accuracy and beauty of which are unparalleled.—*Railway Record.*

BERWICK RAILWAY BRIDGE.—Although the railway bridge across the Tweed has now been in course of erection for a period of about two years, yet, from the present state of the works, it is probable that it will not be finished for upwards of 12 months. On the south, or Tweedmouth side of the river, 14 arches have already been completed, and several others on the same side of the river nearly so; but on the north bank, and over the Berwick side of the river, the remaining arches are not nearly so far advanced, and the foundations of one or two of the piers have yet to be laid. When finished, this bridge will be one of the finest of the kind in the United Kingdom, its length being about a quarter of a mile, and its height above the river 120 feet.—*Edinburgh Courant.*

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 7 per Cent., 199	Belgian, 4½ per Cent., —
3 per Cent. Reduced Ann., 92¼ ½ ¼	Dutch, 2½ per Cent., 54¼ ¼
3 per Cent. Consols Ann., 92¼ ⅜	Brazilian, 5 per Cent., 85⅝
3½ per Cent. Ann., 94 3⅞	Chilian, 6 per Cent., 98
Long Annuities, 8⅜	Mexican 5 per Cent., ex Cou., 28 7⅞ ¾
India Stock, 10½ per Cent., 254	Russian, 5 per Cent., 108 6½
3 per Cent. Consols for Acc. 92½ ¼	Spanish, 5 per Cent, 17⅛
Excheq. Bills, 1000*l.*, 1½d. 39 6 pm.	Ditto 3 per Cent., 34⅛

MINES.—A fair proportion of business has been done in the mining share market this week, and we still find sellers holding out for advanced prices, which, from the improved position of the metal market, may be deemed reasonable. Copper has advanced, and we anticipate further improvement, as also in both lead and tin. The leading mines still command some considerable notice, especially among those who are at a loss where to invest surplus capital; and from the great improvement in the mining interest generally, there is little doubt of this becoming the most favourable of speculative property for investments.

South Basset, Trelawny, North Pool, Stray Park, and South Tolgus, are among the mines lately represented to have considerably improved, and business has been done in each.

In Bwlch Consols, we learn a large number of shares have exchanged hands, and the mine is stated to be in a very improving condition.

For Mendip Hills we find there are buyers, and the improved prospect of increased returns from the smelting department have created an inquiry.

An early dividend being anticipated from Tincroft, an inquiry is being made for these shares, although they do not maintain our former quotations. The position of the mine is exceedingly gratifying.

In South Wheal Josiah several shares have changed hands, and the prospects are represented as highly encouraging.

At East Buller a most promising lode had been opened on, and arrangements being made for the erection of a steam-engine immediately. A great many shares have changed hands.

In consequence of the very great improvements, both in the Old Vitifer and Birch Tor lodes, there has been an active demand for Birch Tor shares, and, at an improved price, many shares have changed hands.

The reports from Tamar Consols this week has been highly satisfactory, and several transactions have taken place.

Shares in the following mines have been done during the week:—Devon Great Consols, North Pool, West Providence, Treleigh Consols, Stray Park, Trehane, Trelawney, South Wheal Frances, Treviskey and Barrier, Bwlch Consols, East Buller, South Tolgus, Tincroft, South Wheal Josiah, Tamar Consols, South Tamar, Mary Ann, West Treasury, West Tolgus, Birch Tor and Vitifer, Cook's Kitchen, &c.

At North Roskear meeting, a dividend of 3*l.* per share was declared; the profit on the months of June and July was 43*l.* 19s. 8d., added to 2632*l.* 19s. 8d. in hand at the last account, enabled a dividend, reserving 2256*l.* 19s. 4d. carried to the credit of the next account.

At the Wheal Anderton meeting, the accounts for the three months ending June were audited, and a balance of 27*l.* 18s. 4d. was found in favour of the purser. A call of 50s. per share was deemed necessary to carry on the operations of the mine; a sufficient quantity of tin was nearly ready for market to pay July costs, and about 500*l.* worth of work broken and at surface to meet future expenditure; the shortness of surface water occasioned by the long drought has precluded its being dressed. The agent's report of the mine represents a good discovery having been effected in the 80 fm. level west. The sinking of the engine-shaft has been suspended, until further operations shall recommend its continuance deeper.

In foreign mines there has been an active inquiry for Imperial Brazilian, National Brazilian, Copiapo, United Mexican, &c. In the former a large number of shares have changed hands; but the advanced prices have kept many buyers hesitating. St. John del Rey and Asturians have also been done.

The Imperial Brazilian Company have received advices to the 23d of June, being five days later than our notice of last week. From the Big Pump vein about 26 lbs. of gold had been extracted from a space of 1 ft. by 10 ft. deep, and the ends are represented as possessing favourable appearances. At the Magelhaes shaft they have sunk on the vein about 3 fms., and extracted 8 lbs. of gold; in the bottom, and one end of the shaft, the appearances still continue very promising. In the 14 fm. level, south of Walker's shaft, the vein, though small, is also found productive. By letters received yesterday, we have the gold report to the 12th July:—Gongo, from 24th June to 12th June, lbs. 7 8 9; Bananal, ditto, lbs. 13 10=lbs. 21 6 9.

St. John del Rey directors also received dispatches yesterday; but we are only prepared to give the returns for June. The produce for the month is 21,985 oits.; the cash, 4915*l.* 13s. 6d.: giving a profit of 2858*l.* 1s. 8d.

A special meeting of the Guadalcanal Mining Company was held on Wednesday last. The report of Mr. H. Thomas and Capt. Curry, of the Linares Mines, was presented to the meeting, entering fully into the prospects of the mines, as far as they had been enabled to form an opinion from what they could see. The erection of machinery, and the operations proposed by the superintendent, Mr. Duncan Shaw, were fully concurred in, and received their acknowledgments, as to the ability, judgment, and economy exhibited. A further capital of 5000*l.* being required for necessary machinery, completely draining the mines, and fully developing the property, a proposal was received and adopted by the meeting to create an additional 2000 new shares, of the value of 5*l.* per share. The allottee of the new shares, on paying the deposit of 10s. per share, would have a bonus of 2*l.* 10s. attached—making the amount 3*l.*; the remaining 2*l.* per share to be paid by instalments of 10s. each.

HULL, THURSDAY.—Shares have been very little dealt in during the week, and where the public have operated it has been chiefly in selling. In fact, confidence has received a check with regard to these securities, and time can alone work the cure. There is a slight demand for certain kinds of preferential shares, but second class unguaranteed stocks are quite neglected.

RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length 1849	Length 1848	Present actual cost.	Price p. share	Div. 1848	Traffic Returns 1849	Traffic Returns 1848
Aberdeen	33	16	1,000,547	17½ 18	—	£ 730	£581
Belfast and Ballymena	37½	37½	514,968	20	5*	445	378
Birkenhead, Lancashire, & Chesh.	19	15	1,088,804	37	5†	1046	943
Bolton, Blackburn, & West Yorksh.	14	—	786,384	6½	—	588	311
Bristol and Exeter	85½	75½	2,660,490	60	—	4426	—
Caledonian	154	141	4,865,135	17½ 17	3	6665	5149
Chester and Holyhead	84	59½	3,358,217	12½ 13	4	2271	2274
Dublin and Drogheda	35½	35½	778,565	29½	—	855	978
Dublin and Kingstown	7½	7½	395,915	—	—	894	1296
Dundee, Perth, & Aberdeen Junc.	47½	47½	544,554	19	6½	1091	1404
East Anglian (Lynn to Ely)	91½	85½	1,167,104	2½	—	606	579
East Lancashire	75½	24	2,628,519	15	5	3859	1471
Eastern Counties and Norfolk	322	295	12,027,069	7½ 7¾	—	14289	15598
Eastern Union	78	50½	1,782,703	13	—	1553	1420
Edinburgh and Glasgow	57½	52½	2,644,378	37	6	3951	4253
Edinburgh and Northern	78	34	2,232,115	10½	2	2625	2246
Glasgow, Paisley, and Ayr	102½	74	2,574,330	50	3	3512	2805
Glasgow, Paisley, & Greenock	23	23	852,846	16½	2	1165	1247
Gt. Northern & East Lincolnshire	126	—	5,138,756	7½ 7¼	5†	2229	—
Gt. Southern & Western, Ireland	168½	110½	3,172,519	29½ 29½	6†	3653	3041
Great Western	230½	206½	11,867,042	63½	6½	15639	21566
Lancaster and Carlisle	70	70	1,476,102	50	4½	4569	2592
Lancashire and Yorkshire	206½	127½	9,218,450	70½	5½	13250	12650
Liverpool, Crosby, & Southport	13	—	84,455	3	—	171	345
London and North Western	435	428	26,251,635	115¾	7	46468	47905
London and Blackwall	5½	4	1,299,675	3½ 3¾	1-12	954	1294
London, Brighton, & South Coast	170	162½	6,502,600	71½	2½	12594	10598
London and South-Western	216½	194	7,874,259	32¾	5½	11095	11178
Londonderry and Enniskillen	14½	14½	185,739	16	—	127	141
Manchester, Sheffield, & Lincolnsh.	157½	91½	6,598,260	30	5	5153	3226
Midland Company	471	423½	14,042,340	54 53	5½†	23389	24888
Midland Great Western (Irish)	50	30½	725,332	24½	4†	1043	879
Monklands	37	—	486,245	—	6	743	—
North British	109½	83	3,649,055	12½	4½	3588	3004
Scottish Central	45½	—	1,364,228	20½	7	1894	1459
Shrewsbury and Chester	48	23	969,618	12	5	1407	889
Shropshire Union	30	—	—	2½	—	343	—
South Devon	57¾	29	1,909,232	8 9	5	1655	1897
South-Eastern	189½	165½	8,116,914	19½ 19¾	5½	13335	10387
Taff Vale	40	40	879,110	—	7½	2110	1850
Ulster	36	36	723,829	45½	—	680	741
West Cornwall	13	—	—	—	—	229	262
Whitehaven Junction	12	12	150,879	9½	3	223	182
York, Newcastle, & Berwick	269	242½	6,827,849	16¾ 16¾	7	12927	13645
York and North Midland	290½	234	4,983,618	21½ 21½	7	8627	9402
FOREIGN RAILWAYS.							
Amiens and Boulogne	76½	68	1,462,562	6	2½	1590	1608
Dieppe	26	—	—	—	—	966	431
Dutch Rhenish	57½	57½	—	6½	—	—	—
Montereau and Troyes	71½	71½	—	—	—	—	—
Northern of France	211	211	7,142,890	2½ dis.	—	18842	12367
Orleans to Bourges (Central)	107½	107½	1,229,848	—	4	—	—
Orleans to Tours	72	72	600,000	32	6	3306	2454
Paris and Orleans	82	82	2,011,720	30¾	8½	8166	7506
Paris and Rouen	85	85	2,082,916	21	5	7864	6358
Rouen and Havre	59½	—	2,272,176	10½	—	3153	2605
Strasburgh and Basle (monthly)	88	88	—	6	—	—	—
West Flanders (ditto)	—	—	—	1¾	—	—	—

* Per cent.—† Interest.—Total for last week, £245,550, being an increase of £19,815 over last year.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price
1000	Abergwessin	9	5
1024	Alfred Consols	6¾	9
1000	Antimony & Silver-Lead	5	—
1024	Ashburton United Mines	8¾	12
1624	Balleswidden	9	18
128	Balnoon Consols	42½	50
1000	Barristown	5¾	1½ 2
3650	Bawden	¼	¼ ½
4000	Bedford	[illegible]¾	3½ 3¾
1280	Birch Tor & Vitifer	10½	6 7
8000	Blaenavon	50	10
5000	Blisland Consols	1	—
100	Botallack	182	25
120	Brewer	5	5
256	Brimpts Tin	2½	2½
10000	British Iron, New, regis.	12	8
—	Ditto ditto, scrip	10	10
2400	Bryn-ar-ian	—	6
128	Budnick Consols	52½	10
1000	Callington	22	9
1000	Camborne Consols	7	4 5½
20000	Cameron's Steam Coal	7	1
256	Caradon Copper Mine	9½	1½
256	Caradon Mines	22½	10
256	Caradon United	24	5 8
256	Caradon Wh. Hooper	21	4½
1000	Carn Brea	15	105
3000	Carthew Consols	1½	6
114	Charlestown	220	—
500	Comblawn	5½	4½
128	Comfort	45	50 55
256	Condurrow	20	65 70
2560	Cook's Kitchen	14	2½ 3
1000	Coombe Valley Quarry	3½	4½
1000	Copper Bottom	1½	6½
900	Court Grange	5	10
212	Craddock Moor	23½	5
128	Creeg Braws	120	30
500	Cubert Mine	12½	—
1000	Cwm Erfin	3½	3 3½
7100	Derwent	8½	5
845	Devon & Courtenay Con.	7½	1½ 2
1024	Devon Great Consols	1	200
1000	Dhurode	2	5
182	Dolcoath	30	15
2560	Drake Walls	5½	3 4
10000	Durham County Coal	45	9
3000	Dyfngwm	10	10 12
512	East Alveuney	5½	6
2500	East Birch Tor	3	3
112	East Caradon	47	47
2048	East Crowndale	6½	4
512	East Combe Silver-Lead	6½	6½
128	East Pool	15	60
9000	East Tamar Consols	¼	¼ ½
94	East Wheal Crofty	125	65 70
128	East Wheal Rose	50	600 625
—	East of Scotland Iron Co.	5	1½
123	East Wheal Seton	14	10
1280	Eagair Llee	1½	4 4½
248	Exmoor Wh. Eliza	6	6
494	Fowey Consols	40	45
1024	Freidd Llwydd Mines	1½	3½
4000	Gen. Mining Co. for Irel.	1½	1½
256	Gonamena	44½	16
128	Goonvrea	4	2
256	Grambler & St. Aubyn	80	8 9
100	Great Consols	1000	180
512	Gt. Wh. Hough Tor Con.	24½	18 20
6000	Growa Slate Company	5	5
6000	Heignston Down Con.	1½	2
1500	Hennock Silver-Lead	1s	1
4500	Hennock Iron & Tin	21s	21s
256	Herodsfoot	27	12 13
10000	Hibernian	12½	1½
1000	Holmbush	22	8 10
1024	Kingsett and Bedford	1½	3½ 4
787	Kirkcudbrightshire	8½	2½
2048	Lamherooe Wh. Maria	8	2½
252	Lanarth Consols	—	4
128	Lelant Consols	90	40
100	Levant	—	200
1000	Lewis	17	9½ 10
1000	Llwynmalees	8	5 5½
3600	Llynvi Iron	50	50
253	Lostwithiel Consols	23	10
6000	Marke Valley	10	¾ 1
5000	Mendip Hills	3½	1½ 1¾
128	Metha	34	—
20000	Mining Co. of Ireland	7	4
1280	Nant-y-cria	5	5
256	New East Crowndale	3½	2½
100	North Pool	45	500 510
140	North Roskear	5½	140
262	North Wh. Leisure	1½	2
256	North Wheal Basset	10	10 12
15000	Northern Coal Co.	23	2
128	Par Consols	35½	650
8000	Pennant & Craigwen	2½	2
1024	Penzance Consols	22s 3d.	3
512	Plymouth Wh. Yeoland	6½	6
200	Polsaith Consols	5½	4½
2500	Rhoswiddol & Bacheiddon	10	10
10000	Rhymney Iron	50	13
10000	Ditto New	3	6½
1000	Rosewall Hill	1	5
256	Rosewarva Mines	—	12

BRITISH MINES—*continued.*

Shares.	Company.	Paid.	Price
2048	Runnaford Coombe Tin	½	5
9000	South Tamar	½	1½ ½
128	South Caradon	5	350
1100	South Dolcoath	5	½ 1
256	Sth. Friendsh. Wh. Ann	30	28 30
256	South Molton	5	13 14 15
256	South Tolgus	16	50 55
256	South Treawny	28½	5
2000	South Wales Mining Co.	2	1 1½
128	South Wheal Basset	20½	365
124	South Wh. Frances	160	255
256	South Wh. Josiah	1½	7 8
1000	South Wh. Maria	2½	1½
10000	Southern & Western, Irish	2½	4
280	Spearne Moor	30	40
94	St. Ives Consols	—	80
128	St. Michael Penkivel	5	10½
999	St. Minver Consols	1	6
1000	Stray Park	43	15½ 16 16½
9600	Tamar Consols	3	7½ 8
10240	Tavistock Consols	¼	¼ ½
1024	Tavy Consols	6½	1½
6000	Tincroft	7	11½ 12
58	Tokenbury	170	10
256	Tregorden	3½	5 5½
256	Trehane	1½	25
5000	Treleigh Consols	6	3½ 4
2000	Trenance	3	—
96	Tresavean	10	95
120	Trethellan	5	15 16
120	Treviskey and Barrier	130	90
200	United Mines	50	150
256	Wellington Mines	25	30 32
128	West Buller	10	275
256	West Caradon	20	17½ 20
512	West Fowey Consols	40	12
256	West Providence	9	26
200	West Seton	45	150
120	West Trethellan	5	5
512	West Wheal Frances	1½	2
256	West Wh. Friendship	9	8
3725	West Wheal Jewel	12	¾ 1
256	West Wheal Tolgus	80	15
256	West Wheal Treasury	19	5
1024	Whiddon Mines	4½	2
5200	Wicklow Copper	5	8½ 8¾
107	Wheal Adams	79	30
1000	Wheal Agar	—	6
256	Wheal Albert	10	1
240	Wheal Anderton	28	10 15
128	Wheal Ann	—	50½
512	Wheal Anna Maria	7	8
120	Wheal Bal	5½	15
256	Wheal Benny	14½	2
1024	Wheal Bray	10	10
256	Wheal Blencowe	21	12
232½	Wheal Calstock	9	20 25
256	Wheal Fortescue	15	—
388	Wheal Franco	27	11 12
128	Wheal Harriet	45	—
100	Wheal Henry	—	25
1024	Wheal Lawrence	2½	2½
112	Wheal Margaret	79	225
512	Wheal Mary Ann	5	26 27½
260	Wheal Oak	6	5
3000	Wheal Penhale	—	6
210	Wheal Prospect	4	7
120	Wheal Reeth	41	150
128	Wheal Rose	60	3
198	Wheal Seton	214	250
180	Wheal Sisters	35½	5
494	Wheal Sophia	4½	5
128	Wheal Spearne	10	68 70
128	Wheal St. Ann	30	35
550	Wheal Trescoll	9	10 15
260	Wheal Trelawny	7½	72 75
256	Wh. Tremaine (St. Ervan)	9½	2½
1024	Wheal Tremayne	9½	3 4
92	Wheal Tryphena	140	100
1000	Wheal Vincent	2½	7
256	Wheal Vlow (Perranz.)	1	2
184	Wheal Vyvyan	—	60
250	Wheal Williams	28½	8

FOREIGN MINES.

Shares.	Company.	Paid.	Price
5000	Alten Mining Company	14½	2½
15000	Asturian Mining Co.	15	2½
20000	Australian	3	5 5½
6000	Barossa Range	1½	1½ ¾
3000	Bolanos	150	—
2000	Ditto Scrip	15	—
10000	Brazilian Imperial	23	4 4½ 6
12000	Cobre Copper Co.	40	23
10000	Copiapo Mining Co.	14	4 4½
20000	General Mining Ass'n.	20	10½
4000	Guadalcanal	5	2½ 3
5000	Kinzigthal Mining Ass.	2	1½
5051	Mexican Company	59½	—
2000	Mexican & South Amer.	8	1 1½
5000	National Brazilian	30	3 3½
104000	N. Brit. Australasian	1	7s 0d
7000	Royal Santiago	10	5½
11000	St. John del Rey	15	9 9½
43174	United Mexican ... Av.	28½	3¾ 3¾ 4

. *We should feel greatly obliged by agents, or others interested, furnishing us with such corrections for our Share List as we may not have received through our usual channels of information—our object being, to present as accurate a list of prices as can be obtained—to procure which, we solicit the aid of correspondents in general.*

LATEST CURRENT PRICES OF METALS.

LONDON, SEPTEMBER 14, 1849.

ENGLISH IRON. *a*	per ton.
Bar, bolt, & square, London	£5 15 0—6
Nail rods	7 0 0
Hoops	7 15 0—8
Sheets (singles)	8 10—8 15
Bars, at Cardiff & Newport	5 2 6—5 5
Refined metal, Wales*	3 10—3 15
Do. anthracite*	3 15 0
Pigs in Wales	3 5—4 5
Do. do. forge	2 15—3 5
Do., No. 1, Clyde ... net cash	2 4 6—2 6
Blewitt's Patent Refined Iron for bars, rails, &c., free on board at Newport*	3 15 0
Do., do., for tin-plates, boiler plates, &c., ditto	4 10 0
Stirling's Patent Toughened Pigs, in Glasgow	2 14—2 16
Stirling's Patent Toughened Pigs, in Wales	3 5—4 5
Staffordshire bars, at the works	6 10
Pigs, in Staffordshire	2 15—3 0
Rails	5 5
Chairs	4 0 0
FOREIGN IRON. *b*	
Swedish	11 10 0—12
CCND	—
PSI	—
Gourieff	—
Archangel	—
FOREIGN STEEL. *c*	
Swedish keg	14 0—14 10
Ditto faggot	15 0 0
ENGLISH COPPER. *d*	
Sheets, sheathing, & bolts, *p. lb.*	0 0 9½
Tough cake ... per ton	84 0 0

Tile	£83 0 0
Old copper *e* ... per lb.	8d
FOREIGN COPPER. *f*	
South American, in bond	—
ENGLISH LEAD. *g*	
Pig ... per ton	15 15 0
Sheet	16 15 0
Red lead	18 0 0
White ditto	22 0 0
Patent shot	19 15 0
FOREIGN LEAD. *h*	
Spanish, in bond	14 15—15
American ditto	—
ENGLISH TIN. *i*	
Block ... per cwt.	3 13 0
Bar	3 14 0
Refined	3 19 0
FOREIGN TIN *k*	
Banca, in bond	3 10 0
Straits	3 8 0
Peruvian (6 mo 2½ p. ct. dis.)	
TIN-PLATES. *l*	
IC Coke ... per box	1 7—1 8 6
IC Charcoal	1 10—1 12
IX ditto	1 18 0
SPELTER. *m*	
Plates, warehoused ... per ton	14 17 6—15
Ditto, to arrive	14 15—14 17 6
ZINC. *n*	
English sheet ... per ton	22 0 0
QUICKSILVER *o* ... per lb.	2s. 11d. 3s

Terms.—*a*, 6 months, or 2½ per cent. dis.; *b*, ditto; *c*, ditto; *d*, 6 months, or 3 per ct. dis; *e*, 6 months, or 2½ per cent. dis.; *f*, ditto; *g*, ditto; *h*, ditto; *i*, ditto; *k*, net cash; *l*, 6 months, or 3 p. ct. dis.; *m*, net cash; *n*, 3 months, or 1½ p. c. dis.; *o*, ditto, 1½ dis.

* Cold-blast, free on board in Wales.

REMARKS.—We have no alteration to notice in the metal market since our last—prices remain much the same, with the exception of Scotch pig-iron, which must be written 5d. per ton lower. Copper is advanced this week ½d. per lb. At public sale this day straits tin was sold at 68s. for fine quality. Tin-plates continue scarce, and higher rates are asked. Spelter dull of sale.

GLASGOW, SEPT. 13.—The aspect of the pig-iron market is still tending downwards. Consumers are buying very sparingly, and the business in general is very limited. We quote the price of mixed Nos. at 43s. 6d. to 44s.—cash.

EXPORTATION OF THE PRECIOUS METALS.—The following are the official returns of the exports of gold and silver from the port of London for the last week: Silver coin to Rotterdam, 2000 ounces; ditto to Belgium, 72,000—Silver bars to ditto, 5000; ditto to Boulogne, 5000; ditto to Dunkirk, 12,000—Gold coin to Mauritius, 48; ditto to Hamburgh, 50—Gold bars to Havre, 441.

CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars ... per oz.	£3 17 9
" Portugal pieces	0 0 0
New dollars ... per oz.	£0 4 10½
Silver in bars (standard)	0 4 11⅝

JOINT-STOCK BANKS.

Shares.	Companies.	Paid.	Div. p. cent.	Price.
22,500	Australasia	£40	£3	£25
20,000	British North American	50	6	40
20,000	Colonial	25	5	6½ 6½
20,000	Commercial of London	20	6	20½
60,000	London Joint-Stock	10	6	16½ 16⅝
40,000	London and Westminster	20	6	24½ 24¾
10,000	National Provincial of England	35	5	35½
20,000	National of Ireland	22½	6	18½
20,000	Provincial of Ireland	25	8	40
10,000	South Australia	22½	—	17¾ 18
20,000	Union of Australia	25	6	25½ 25¾
60,000	Union of London	10	6	10½

MEETINGS OF COMPANIES DURING THE ENSUING WEEK.

MONDAY ...... West Treasury Mining Company—offices, at Twelve.
Irish Waste Land Improvement Company—offices, at One.

TUESDAY ...... Devon and Courtenay Consols Mining Company—at the mine.
Belgian Eastern Junction Railway—London Tavern, at One.

WEDNESDAY .. Gadair Mining Company—offices, Manchester, at Four.

THURSDAY .... South-Eastern Railway—Bridge-house Hotel, at One.

FRIDAY .... Commercial Dock Company—offices, at One.

COLLIERY STRIKE AT RISCA.—We are sorry to find, that at present there appears no chance of reconciliation of Mr. Russel with the colliers—the former persists in his determination to adhere to the reduced wages, which the men refuse to accept. We have no means of judging who is in the wrong; but trust, for the sake of the workmen's families, and the prosperity of the neighbourhood, this state of things will soon terminate.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The first *conversazione* took place at the Town Hall, Birmingham; it was most numerously attended. Prof. Faraday exhibited the electric light, and made a number of experiments in electricity with various metallic wires. Yesterday morning the several sections again assembled, and several interesting papers were read. Some further remarks will be found in another column.

Pontypool.—J. Blackman was killed by getting his leg entangled in the machinery at the New British Iron Company's works.

LEAD ORES

TICKETINGS FOR ABOUT 100 TONS LAXEY LEAD ORE.

Douglas, Isle of Man, Sept. 11.

Bidders.	Price per Ton.
Walker, Parker, and Co. (purchasers)	£20 3 0
Sims, Willyams and Co.	19 10 6
J. T. Treffry	19 1 6
John P. Eyton	18 18 0
Mather and Co.	18 18 0
Tamar Smelting Company	18 11 6
Thomas Somers	18 11 6
Newton, Keates, and Co.	18 5 6
Combmartin Company	17 1 0

Sold at Bagillt, Sept. 10.

Cairnsmore	40	£8 15 6	Walker, Parker, & Co.

Sold at the Mine, Sept. 12.

Holmbush (computed)	30	£15 1 0	Pontifex & Co.

Ticketings at the White Horse Hotel, Holywell, Sept 13.

Maesgrerwddu (Talargoch)	61	£10 1 6	Walker, Parker, & Co.
ditto ditto	13½	10 1 0	Mather & Co.
Coetia Llys ditto	26½	10 8 0	ditto
Bodelwyddau	15	10 10 6	J. P. Eyton.
Hendre	100	9 17 6	Walker, Parker, & Co.
Deep Level (Halkin Mines)	77	9 13 0	ditto
Fronfownog	85	9 14 0	Newton, Keates, & Co.
ditto (Round)	15	12 10 0	Walker, Parker, & Co.
Aberduna	12	9 13 0	Mather & Co.
Talacre	95	11 2 0	ditto
Maesysafn	50	9 14 0	Walker, Parker, & Co.
South Australia	57	12 2 6	Newton, Keates, & Co.
ditto	40	14 5 0	Walker, Parker, & Co.
ditto	4½	11 15 0	ditto
ditto	4½	11 15 0	Newton, Keates, & Co.
ditto	4	10 0 0	ditto
Peel	75	10 10 6	Walker, Parker, & Co.
Machynlleth	41	10 2 6	Newton, Keates, & Co.
Total tons	776.		

BLACK TIN

Mines.	Tons.	Price per Ton.	Purchasers.
Wheal Anne	2½	£38 12 6	J. H. Enthoven & Co.
South Friendship Wh. Anne	13	30 0 0	ditto

COPPER ORES.

Sampled August 29, and Sold at Andrew's Hotel, Redruth, Sept. 13.

Mines.	Tons.	Price.
Carn Brea	105	£ 4 9 6
ditto	104	8 11 6
ditto	100	10 15 0
ditto	93	8 19 0
ditto	89	5 11 6
ditto	83	6 4 0
ditto	81	6 13 6
ditto	75	4 12 6
ditto	73	8 19 0
ditto	56	4 10 0
ditto	45	2 12 0
Duchy.		
Tywarnhayle	95	2 17 0
ditto	70	2 9 6
ditto	25	7 2 6
ditto	11	4 6 0
Nancekuke	23	3 9 0
ditto	6	3 18 0
ditto	5	2 3 6
Adventurers.		
Tywarnhayle	98	3 5 0
ditto	40	3 1 6
ditto	34	2 13 0
ditto	29	3 15 6
ditto	28	8 19 6
ditto	12	0 16 0
Nancekuke	33	4 17 6
Par Consols	93	7 4 6

Mines.	Tons.	Price.
Par Consols	87	£7 6 6
ditto	77	5 10 6
Levant	65	5 2 0
ditto	64	8 18 6
ditto	52	10 0 0
ditto	36	2 8 6
West Wh. Treasury	91	5 3 6
ditto	72	5 2 6
ditto	35	9 5 0
Wh. Tremayne	63	2 1 0
ditto	62	2 18 0
ditto	60	3 11 0
Wh. Agar	72	3 15 0
ditto	30	2 18 6
ditto	28	9 3 6
West Wh. Buller	52	11 6 0
ditto	38	9 4 6
ditto	14	4 4 6
Charlestown United	79	6 11 0
Creeg Braws	42	5 16 0
ditto	11	3 11 0
St. Aub. & Grylls	14	6 15 0
Godolphin Consols	7	2 8 0
Wh. Pleasant	6	5 0 6
N. Wh. Abraham	5	4 7 0
West Wh. Rodney	4	1 9 6
Wh. Neptune	2	4 7 0
Wh. Fortune	2	1 2 6
East Crinnis	1	5 16 6

TOTAL PRODUCE.

Mines.	Tons.	Amount.
Carn Brea	904	£6189 14 0
Duchy. Tywarnhayle, Nancekuke	235	783 1 0
Adventurers. Tywarnhayle, Nancekuke	274	1062 17 0
Par Consols	257	1734 12 6
Levant	217	1510 0 0
West Wh. Treasury	198	1163 13 6
Wh. Tremayne	185	521 19 0
Wh Agar	130	614 13 0
West Wh. Buller	104	£997 6 0
Charlestown Mines	79	517 9 0
Creeg Braws	53	282 13 0
St. Aub. & Grylls	14	94 10 0
Godolphin Consols	7	16 16 0
Wh. Pleasant	6	30 3 0
N. Wh. Abraham	5	21 15 0
West Wh. Rodney	4	5 18 0
Wh. Neptune	2	8 14 0
Wh. Fortune	2	2 5 0
East Crinnis	1	5 16 6

Average Standard .... £103 16 0 | Average Produce 8½

Average Price per ton £5 16 6

Quantity of Ore .... 2677 tons | Quantity of Fine Copper, 220 tons 16 cwts.

Amount of Money £15,563 15 6

LAST SALE.—Average Standard .... £103 3 0.—Average Produce 7¾

Standard of corresponding sale last month, 95*l.* 19s.—Produce, 8½.

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal	131	£855 1 6
Vivian and Sons	588	3898 7 0
Freeman and Co.	165	816 11 9
Pascoe Grenfell and Sons	478	2447 12 3
Crown Copper Co.	32	285 12 0
Sims, Willyams, and Co.	509	1952 19 0
Williams, Foster, and Co.	609	4470 0 9
Schneider and Co.	165	837 11 3
Total tons	2677	£15,563 15 6

Copper ores for sale on Thursday next, at the Royal Hotel, Truro.—Mines and Parcels.—Devon Great Consols, Wheal Josiah, Wheal Maria, Wheal Fanny, and Wheal Anna Maria 1326—West Caradon 299—Fowey Consols 220—Wheal Friendship 217—Poldice 169—Bedford United Mines 134—Wheal Maiden 42—Phœnix Mines 32—Wheal Jewel 28.—Total quantity of ore to be sold, 2467 tons.

Copper ores for sale at the Royal Hotel, Truro, September 27.—Mines and Parcels.—Consols, 749—United Mines, 613—Tresavean, 435—Treviskey, 350—Par Consols, 252—South Caradon, 240—Trethellan, 232—Wheal Comfort, 222—South Wheal Tolgus, 221 Perran St. George, 168—Treleigh Consols, 100—Grambler and St. Aubyn, 63—Wh. Ellen, 51—Gonamena, 40—Wh. Mary Consols, 36—Richards's Ore, 19—Williams's Ore, 6—Total, 3790 twenty-one cwts.

COPPER ORES

At SWANSEA, for sale Sept. 20.—Cobre 96, ditto 92, ditto 86, ditto 48, ditto 29, ditto 73, ditto 71, ditto 69, ditto 68, ditto 25.—Santiago 81, ditto 75, ditto 58, ditto 57, ditto 56, ditto 28, ditto 8.—Cuba 89, ditto 68, ditto 8.—Ballymurtagh 50, ditto 49, ditto 43, ditto 34.—Berehaven 102.—Knockmahon 79.—Burra Burra 32.—Total, 1523 tons.

NOTICES TO CORRESPONDENTS.

*** We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

"A Land Proprietor" (Cornwall) states that a party is now in London, trying to get shareholders for a mine on his property; and having had some correspondence respecting the sett, he thinks it right that those who would wish to embark in legitimate mining should be made acquainted with a few facts in connection with it. There has yet been no meeting of shareholders, no Cost-book signed, and, of course, no resolutions entered into as to how the mine is to be conducted, and no opportunity given to ascertain if the title to the sett is good. Under these circumstances he wrote him, declining to take shares, but would take a sixteenth if 10,000*l.* could be raised, as proposed. All the lodes run through other land of the writer, and in consequence of the adventurer demanding money of him, without being appointed purser, or any other authority to commence mining operations, he says he shall decline granting him the setts. Our correspondent has enclosed us a copy of the letter, which is a compound of bombast, canning, and effrontery; after appointing an *old friend* as secretary, he talks of "expected introduction to wealthy capitalists," the "necessity of his residing in London to obtain a connection;" and closes by stating—"We are only two doors from Rothschild, so I have fixed on a good neighbourhood *I am promised an introduction to that gentleman.* I have had several applications for shares, and I want to get a first-rate party, between ourselves. *You can remit me your deposit* when you answer this letter." The "land proprietor" did not, of course, "remit," and we should imagine the adventurer has caught but few gulls by so barefaced an attempt. It has ever been such irregular and suspicious proceedings which have retarded the progress of legitimate mining.

"A Shareholder" (City).—The small town of Guadalcanal, famous for its silver mines, is 19 leagues from Seville; the ports from the latter city are Brenes, Cantillana, and Cazalla. The country is rich and well cultivated, but barren between Cazalla and Cantilla. Beyond this town the Guadalquivir is crossed.

"A Student" (Durham).—In the *Transactions of the Royal Society*, for 1739, an account is published of the possibility of extracting from coal, by means of heat, a permanently elastic fluid of an inflammable nature. As these experiments furnish the earliest evidence of the discovery of gas, we subjoin the account in the words of the discoverer, the Rev. Mr. Clayton:—"Having introduced a quantity of coal into a retort, and placed it over an open fire, at first there came over only phlegm, and afterwards a black oil, and then likewise arose a spirit, which I could in no way condense, but it forced my lute or broke my glasses. Once when it had forced my lute, coming close thereto, in order to repair it, I observed that the spirit which issued out caught fire at the flame of the candle, and continued burning with violence as it issued out in a stream, which I blew out and lighted alternately for several times. I then had a mind to try if I could save any of this spirit; in order to which, I took a turbinated receiver, and putting a candle to the pipe of the receiver while the spirit rose, I observed that it catched flame, and continued burning at the end of the pipe, though you could not observe what fed the flame. I then blew it out, and lighted it again several times, after which I fixed a bladder, squeezed, and void of air, to the pipe of the receiver. The oil and flame descended into the receiver, but the spirit, still ascending, blew up the bladder. I then filled a good many bladders therewith, and might have filled an inconceivable number more, for the spirit continued to run for several hours, and filled the bladders almost as fast as any man could have blown them with his mouth, and yet the quantity of coals distilled was inconsiderable. I kept this spirit in the bladders a considerable time, and endeavoured several ways to condense it, but in vain; and when I had a mind to divert strangers or friends, I have frequently taken one of these bladders and pricked a hole therein with a pin, and compressing gently the bladder near the flame of a candle, till it once took fire, it would then continue flaming, till all the spirit was compressed out of the bladder, which was the more surprising, because no one could discern any difference in the appearance between this bladder and those which are filled with common air." From this narrative it is easy to be inferred, that the accident which happened to Mr. Clayton's apparatus was the means of leading to the discovery of coal gas; but it does not appear that he, or any other individual, thought of applying the discovery to any practical purpose till the year 1792, when Mr. Murdoch, who then resided at Redruth, commenced a series of experiments upon the properties of the gases contained in different substances. In 1797 he exhibited publicly his more matured plans for the preparation of coal gas.

"J. H." (Crooks, near Sheffield).—We cannot find space for the communication on the ventilation of coal mines. To insert the numerous suggestions which we weekly receive on this subject would be impossible, nor, if we could, would it effect the slightest advantage, the majority being merely modifications of others. In the present case, if we understand the proposed plan, there is little that is new, and that little complex and difficult. Air-ways, or headings, in the roof have long been in general use in some districts, and the mode in which "J. H." suggests their connection with the furnace is precisely on the principle adopted by Mr. Gibbons, in the 10 yard coal. "J. H." is by no means in advance of the age in ventilating coal mines.

"T. B." (Redruth).—The mining district of Fahlun, in the province of Dalecarlia, occupies a space of 9 leagues in length, by 2½ in breadth, and is surrounded by a reddish granite, which becomes of a finer grain as it approaches the centre of this space, and is then succeeded by a micaceous rock, divided into rhomboidal fragments. The principal mass, which is of enormous dimensions, consists of iron and copper pyrites, lying in a vertical position, from N.W. to S.E., along the valley in which it is deposited. Here there is an immense opening, or gulf, 849 feet in length, 720 in breadth, and 240 in depth, which was produced in the year 1687, by the falling in of the superincumbent mass, in consequence of the unskilful manner in which the subterranean operations had been conducted. The mass of ore in this mine is supposed to be in the form of an inverted cone, and the excavation has been carried to a depth of more than 200 fathoms; but it is supposed that this is nearly the utmost extent of the lode; latterly the operations have been conducted on a much more limited scale than formerly. It was in this mine that Gustavus Vasa worked previous to freeing his country from the Danish yoke. In the mine of Garpenberg, which is about 18 leagues from Fahlun, there are 14 veins in a vertical position, and all parallel to one another, being situated in a quartzose micaceous schist, which is also disposed parallel to the veins.

P. Neil (Liverpool).—The first Act of Parliament for rendering the Shannon navigable was passed in the year 1703.

"A Student" (London).—Souberian and Leibig, by distilling chloral mixed with lime and water, or with solution of potassa, obtained a liquid, which, when shaken with sulphuric acid, and then separated and rectified over baryta, in a perfectly dry retort, yielded a dense limpid fluid, which was designated *chloroform*. The same compound is obtained more easily by distilling a mixture of 1 lb. of chloride of lime, 3 of water and 3 ozs. of alcohol, in a capacious retort—about 3 ozs. of chloroform pass over. The specific gravity of chloroform is 1·480, at 65°, its boiling point about 140°—the density of its vapour = 42. It is decomposed when passed over red-hot iron and copper; and when passed through a red-hot glass tube, deposits crystals, apparently of chloride of carbon. According to Dumas, chloroform consists of carbon, 10·24; hydrogen, 0·83; chlorine, 88·93.

John Harland (Whitby).—The richest coal mines in France are said to be those which lay between Calais and the Rhine. The produce of the north amounts to nearly three-fourths of that of the whole Republic. The most important coal-fields in this part of the country are those of Boulogne, Jenappes, and Auzin.

"T. G." (Cambuslang).—There is nothing new in our correspondent's communication, and we can only insert those which really contain some novel suggestions, or description of scientific appliances, which are likely to prove advantageous.

"G. F." (Cardiff).—The pitchstone bed at Corygills is 15 ft. thick, and a dark green or black rock enclosed between strata of sandstone which are hardened towards the junction. The pitchstone is marked by lines parallel to its nearly level surfaces, and these are crossed by the most distinct vertical faces of prisms. The lower part is porous—between it and the sandstone beneath is a white crumbly mass, soft as steatite, which it much resembles.

"A Celt" (Glasgow).—Professor Phillips has lately analysed peat charcoal, and found it to consist of carbon, 79·24; hydrogen, 2·20; nitrogen, 0·34; oxygen, 6·44; sand, 2·48; oxide of iron, 1·66; phosphoric acid, 0·34; silicate of potash, 0·98; chloride of sodium, 2·53; carbonate of lime, 1·95; sulphate of lime, 1·44—making, on the whole, 88·42 parts combustible, and 11·58 incombustible matter.

"A Constant Reader" (Cornhill).—Silver was formerly raised at Clonmines, in the county of Wexford. It is stated by old traditions that the Danes established there a mint for its coinage.

"G. T." (Aberfeldy).—The ores of bismuth, to be eliquated, are sorted by hand from the gangue, broken into pieces about the size of a hazel nut, and introduced into the ignited pipes of the furnace; one charge consists of about ½ cwt., so that the pipes are filled to half their diameter, and three-fourths of their length. The sheet-iron door is shut, and the fire strongly urged, whereby the bismuth begins to flow in 10 minutes, and falls through the holes in the clay plates into hot pans, containing some coal dust. Whenever it runs slowly, the ore is stirred round in the pipes at intervals during half an hour, in which time the liquation is usually finished. The residium, called bismuth barley (graupen), is scooped out with iron rakes into a water trough, the pipes are charged afresh, the pans when full have their contents cast into moulds, forming bars of from 25 to 50 lbs. weight. About 20 cwts. of ore are smelted in eight hours, with a consumption of 63 Leipsic cubic feet of wood. The production of Schneeberg is about 9800 lbs. The bismuth thus produced by liquation upon the large scale, contains admixtures of arsenic, iron, and some other metals, from which it may be freed by solution in nitric acid, precipitation by water, and reduction of the subnitrated oxide by black flux. By exposing the crude bismuth for some time to a dull red heat, under charcoal, arsenic is expelled.

"G. B." (Gloucester).—The canal of Kiel joins the River Eyder with the Bay of Kiel on the north-eastern coast of Holstein, forming a navigable communication between the Baltic and the German Ocean, without performing the long and difficult voyage round Jutland, and through the Cattegat and the Sound. The Eyder is navigable, for vessels not drawing more than 9 ft. water, from Tonningen, near its mouth, to Rendsburg, where it is joined by this canal, which communicates with the Baltic at Holtenau, about three miles north of Kiel. The length of the canal is about 20½ miles, exclusive of about 6½ miles of what is principally river navigation, but attended with considerable difficulty from shifting sand banks. The canal is about 95 ft. wide at top, 51½ ft. at bottom, and 9½ ft. deep. Its summit rises 24½ ft. above the sea, by six locks.

"A Jeweller" (Bond-street).—The only important difference between emerald and beryl is in their colours. The emerald is emerald green, which it derives from a small proportion of chrome; all the varieties of other colours, tinged more or less yellow and blue, or altogether colourless, are beryl. The common form is the hexahedral prism, which sometimes is deeply striated longitudinally, and terminated by a six-sided pyramid, whose summit is replaced, or the terminal edges and angles of the prisms are replaced, by small planes; it is either transparent, transincent, or opake; its fracture is conchoidal and uneven. The transparent varieties become clouded before the blow-pipe; and on increasing the heat, assume the appearance of mother-of-pearl; with borax it fuses into a transparent colourless glass. This species occurs principally in veins traversing granite in implanted crystals, associated with felspar, topaz, tin ore, &c. The most splendid crystals of emerald are said to occur in a vein of magnesian limestone, which traverses a hornblende rock at Muro, near Santa Fé de Bogota, in Granada; some of these have been found exceeding 2 inches in length and breadth. Less distinct varieties occur at Mount Zalora, in Upper Egypt. The only locality of emerald with which the ancients are believed to have been cognisant, is Canjarjum, in the district of Colembetor, in Hindoostan, and embedded in mica slate, in the Henbach Valley, Pinzgau district, Saltzburg. The aqua-marine, or precious beryl, is met with principally in the Brazils. Large hexagonal pale green coloured translucent prisms of the common beryl, are met with in the granite district of Nertschinsk, and in the Uralian and Altai ranges of Siberia. The most remarkable in point of size are those from Ackworth, in New Hampshire, which are described as weighing from 200 to 300 lbs., and measuring 4 feet in length. A coarse variety occurs near Limoges, in France, and embedded in granite at Finbo and Broddbo, near Fahlun, in Sweden, and others at Bodenmais and Rabenstein, in Bavaria. Beautiful crystals, occasionally two or three inches in length, and having a peculiar pale blue colour, occur in granite, associated with topaz, felspar, black quartz, and mica, at the Mourne Mountains, County Down, Ireland.

"A Shareholder in the St. John del Rey Mining Company" has omitted to furnish us with his name and address: when he complies with that indispensable rule, his communication will receive attention.

F. T. Harvey (Islington).—According to Sir David Brewster, the following is the order in which the metals polarise most light in the plane of reflection:—Galena, lead, grey cobalt, arsenical cobalt, iron pyrites, antimony, steel, zinc, speculum metal, platinum, bismuth, mercury, copper, tin-plate, brass, grain tin, jeweller's gold, fine gold, common silver, and pure silver.

"S. G." (Cardiff).—Mr. Murray, of Albermarle-street, has lately published a work, in 8vo., treating on porcelain. A good description of the glazing of pottery is found in Dr. Ure's *Dictionary of Arts, Manufactures, and Mines.*

"D. T." (Cwm Avon).—There are no works published solely on the sinking of pits—the most useful books treating on this subject, are *On the Winning and Working of Collieries*, by Matthias Dunn, sec. viii., and Pole *On the Cornish Engine.* The report of the Risca Colliery explosion can be obtained at Messrs. Hansard's, Holborn, publisher of Parliamentary papers.

"G. S." (Penarth).—The best accounts of the different sorts of pig-iron, will be found in Mr. Mushet's work on iron, published by Mr. Weale, High Holborn; and also in Scrivenor's *History of the Iron Trade.*

*** We should feel obliged to all pursers, captains, or adventurers, to forward particulars of meetings, &c., of the mines with which they may be connected, on the earliest opportunity, that they may be published in the Journal.

*** It is particularly requested that all communications may be addressed—

To the Editor,
Mining Journal Office,
26, Fleet-street, London.

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THE MINING JOURNAL

Railway and Commercial Gazette.

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The proceedings of the British Association for the Advancement of Science commenced, at the Free Grammar School, New-street, Birmingham, on Wednesday last, and although it was much feared by many that, in consequence of the holding of the several musical festivals so shortly before, the public mind would be dispirited for scientific discussions, they have commenced auspiciously, and there is every probability of the meetings proving highly interesting and popular. It will be remembered, that the association held their meeting in Birmingham in 1838, and much doubt was then previously entertained of a successful issue, from the fact of serious riots and fires having taken place in the town a few weeks previous, and from which excitement the inhabitants had not recovered. These fears, however, turned out to be groundless, as, in comparison with other towns, the results were highly satisfactory; and, from the number and respectability of the arrivals already in the town, there is every promise of an interesting and successful compaign. This first meeting, as is usual from its *pro formâ* character, was but thinly attended. The Marquis of Northampton occupied the chair, supported by the Rev. T. Robinson, president elect, and J. Taylor, Esq., the treasurer. Mr. Phillips, the chemical professor, read the minutes of the last two meetings, and the report for the past year. It referred chiefly to the observatories and meteorological apparatus at Toronto and Kew. The council had great pleasure in announcing that Her Majesty's Government, on the joint suggestions of the Marquis of Northampton and Sir John Herschell, had granted Mr. Ronalds 250*l.* per annum for his invention of self-registering magnetical and meteorological apparatus; they had also the gratification to notice that the ingenious inventions of Mr. Brookes had likewise received pecuniary recompense. Professor Dove, of Berlin, had offered to supply the association with as many copies as might be desired of his map of the monthly isothermal lines of the globe, founded upon the temperature tables printed in the volume of Reports of the British Association for 1848, which maps have been partly engraved and partly lithographed at the expense of the Royal Academy of Berlin. It was decided to request 500 copies, the association paying for paper and printing, which are to be sold to members at 5*s.* for the three maps. Prof. Plucker, of Bohn, Dr. Siljestrom, of Stockholm, and Professor H. D. Rogers, of Philadelphia, were added to the list of corresponding members. From the treasurer's account, it appeared that the receipts for the last year were 1961*l.* 2*s.* 9*d.*, and there was a balance in hand, after paying all expenses, of 360*l.* 7*s.*, besides stock in 3 per Cent. Consols amounting to about 3500*l.* The following gentlemen were then appointed presidents to various sections:—W. Hopkins, Esq., M.R.S., mathematical and physical science; John Perry, M.D., F.R.S., chemistry and its application to agriculture; Sir C. Lyell, F.R.S., geology; W. Spence, Esq., F.L.S., natural history and physiology; Dr. Hodgkins, ethnology; Lord Littlelon, statistics.

The first general meeting was held at the Town-hall in the evening; the rain poured in torrents, and the attendance was consequently much thinner than was expected, not more than 1000 persons occupied the body of the hall, the council and other learned bodies, occupying the orchestra gallery. The Marquis of Northampton took the chair, and, after a neat address, resigned the presidency, introducing the new president, the Rev. Dr. Robinson, who, in an eloquent speech, expatiated on the advantages of the association, and how it was that, through the absence of combination and free negociation among the learned in ancient times, astronomy became astrology, chemistry became alchemy, and natural philosophy became magic. But at last, to borrow an illustration from geology, creeping things and monsters had given way to a higher order of beings, the philosophers of Europe had become worthy of the name, and each vied with the others how they could most extensively make known the results of their various investigations. The learned President next referred to the origin and prospects of the Royal Society, and ably showed that it was not by the absorption of all societies into one large one that success could be attained in the prosecution of science, but by each being independent and self-governed, whilst all were held together by a brotherhood and community of purpose. The British Accociation ought to identify itself with all scientific societies, as far as possible, and every member of a philosophical society, publishing transactions, was admitted a member of that body by right; and their legislative authority was composed from the members of those societies who had contributed papers to its transactions. He then enumerated many of the absolute benefits to science which had been obtained by the exertions of the association, among which was the published catalogue of the details of 8400 stars, the calculations of each of which involved the operation of upwards of 400 figures, and above 50 arithmetical workings, which publication had reduced the toil of the astronomer from hours to minutes. This alone had cost 2000*l.*; and during the 18 years of its establishment, the association had expended in such works 15,000*l.* He alluded at length to the benefits science had conferred on the useful arts; as an instance, the production of iron had been increased sixfold since the invention of puddling-furnaces and the hot blast, and the agricultural produce of our island might be doubled if science was properly brought to bear upon its culture. He was happy to say that the application of practical science, to an extent never before contemplated, had found its way into university instruction; but knowledge was not wisdom. To know was not the sole, nor even the highest office, of the intellect. That which most conduced to men's well-being was to love and follow that which was proved; to trace through all its forms, wherever they might find them, the first great cause of all. If science was cultivated in reference to that end, it was the noblest of man's possessions, the most glorious of his attainments.

We shall, as usual, fully notice the various communications and proceedings under their several heads.

A deputation from the Society of Arts, consisting of three gentlemen, with Mr. Cole, as leader, is making the tour of the principal manufacturing cities and towns in the United Kingdom, for the purpose of explaining the nature and objects of the proposed universal exhibition of manufactures in 1851, and to ascertain the views of the leading manufacturers respecting it. On Wednesday week, at Glasgow, the Lord Provost convened a meeting in the council chamber, for the purpose of introducing the deputation, which was well attended. Mr. Cole stated, that the proposal had entirely emanated from Prince Albert, who had himself drawn up a series of resolutions, forwarded them for the consideration of the society, and expressed a desire that they should be submitted to the manufacturers of the principal towns in the kingdom. These resolutions propose that the exhibition shall consist of specimens from all parts of the world, so that it might be seen in what British manufactures were deficient, and in what they excelled—that it be held in 1851, so as to have ample time to get the specimens in order, and all arrangements perfected—that the premiums should amount at least to 20,000*l.*, of which 5000*l.* should form one prize for the most valuable invention, or improvement, in art or manufacture—that in the event of general approval, Government should be requested to issue a Royal Commission, to superintend the arrangements, judge of the specimens, and distribute the prizes. Proper erections will be constructed in Hyde-park, 1½ mile long; and to give the working classes an opportunity of judging of the mechanical skill of various countries, cheap trains would run from all parts for the occasion. It is also proposed, that gold medals should be given in all cases with the premiums, and it is probable that the Queen, in person, will distribute the prizes to the successful competitors. An interesting discussion ensued, from which it appeared that the suggestions of Prince Albert were unanimously approved, and a series of resolutions were passed in accordance therewith.

On the following Friday a meeting took place of the manufacturers of Dublin and members of the Royal Dublin Society, for the purpose of introducing the deputation. A very animated and interesting discussion ensued, in which the several parties expressed their gratification at the proposed exposition, which was so calculated to advance the manufactures of the country; and a series of resolutions were also here adopted, pledging the meeting to forward the proposal by every means in their power.

In our columns of to-day will be found a notice of the experiment, or rather the test to which Wright's Patent Steam Generator was submitted, on the 8th inst., which is, we think, of no slight import to our mining friends. It is hardly necessary to observe to those engineers in Cornwall who have obtained such eminence in the manufacture of pumping engines, including Messrs. West, Sims, Hocking, Loam, and others, that a result such as we report will at once claim their attention, as well as that of pursers and mine adventurers generally. The quantity of coal consumed by 23 engines, employed on 15 mines, working in the aggregate 90 months, or an average of four months each, was 361,112 bushels, or allowing 76 lbs. to the bushel, 12,252 tons, or at the rate of 36,756 tons per annum—a saving on which alone of above 50 per cent. in evaporative power would have yielded the adventurers an increased return of 20,000*l.* per annum. The following are the data on which the calculations are made:—

Mines.	*Engines.*	*Months.*
Wheal Prosper	3	2
Carn Brea	2	6
United Mines	5	12
Perran St. George	1	7
East Wheal Rose	2	12
Great Work	1	10
East Wheal Crofty	1	10
Wheal Mary Consols	1	8
Andrew and Nangiles	1	5
West Wheal Treasury	1	1
Poldice	1	4
East Pool	1	4
Tywharnhale	1	6
South Wheal Frances	1	2
Treleigh Consols	1	1
Mines..... 15.—Engines.... 23.—Months.... 90.		

It is, however, to be observed that, in selecting 23 engines, employed on 15 mines, we have taken the returns furnished of certain engines giving the best power, and, consequently, consuming the least quantity of coal; while the number of engines employed on the Great Consols, Tresavean, North and South Roskear, and the Pool Mines, being above 100 confined to one district not noticed, neither touching districts further west, or in the localities eastward, as Callington, Holmbush, &c., or again, Polberrow and others, and entirely omitting Devon, there would be, by the employment of this apparatus, we have no hesitation in saying, a saving of not less than 200,000*l.* per annum in the article of fuel alone in the mining expenses of Cornwall. When we consider the number of engines employed in the two counties, the subject strikes us as one of no mean importance; and we shall endeavour to collect more minute details as to the quantity of coal consumed; but it must be apparent to all who examine the cost-sheets, that so great a reduction in the cost of coal would form so considerable a reduction in the expenses of our deep mines, as to bring about a perfect revolution in favour of the adventurer and miner.

SLAVE-HOLDING MINING COMPANIES.

[From the *Morning Post* of September 10.]

Recent advices from Brazil show a lamentable state of things at Morro Velho, the head quarters of the St. John del Rey Mining Company. In a former article, it will be remembered, we drew attention to the dreadful mortality which existed amongst the slaves belonging to the company; and with reference to the return of 40 deaths during five months as stated in the official communication from the board of directors, we pointed out that the per centage of mortality was 9 per cent. per annum as compared with the whole population, 19 per cent. as compared with the adults, and 40 per cent. as compared with the number of "borers," amongst whom almost the entire deaths occurred. It now appears that the actual number of fatal cases during those five months was 47, instead of 40, which necessarily increases the per centage from 9 to 10 per cent., or to one tithe of the population; from 19 to 22½ as compared with the adults; and from 40 to 47 per cent. as compared with the borers, who, one and all, are slaves. This really is a frightful state of things, and something must be done promptly to put an end to this wholesale sacrifice of human life. We wish we could say that this distressing statement was the worst side of the picture, but we are compelled to mention that the number of deaths during the month of May, the period of the last return, was 14, or equal to 168 during the year, being 15 per cent. of the entire population; 35½ per cent. on the adults, and 70 per cent. on the number of borers. No less than 14 died within a few hours of being "excused" from further labour. It seems almost incredible that such a state of things can exist on property belonging to Englishmen, but it is nevertheless the fact, and would be revolting even if it occurred to the employed of savages. No doubt statistics, more or less similar, could be furnished in respect of the other slave-holding mining companies; but they prudently strive to hide their proceedings in darkness, and keep perfect silence on all these points. The St. John del Rey Company have, however, stood forth as the champions and vindicators of slavery, and boldly before the world, in an official letter from the secretary, declared that the expediency of upholding slavery is a matter of opinion. It is no wonder, therefore, that this company should have obtained an unenviable notoriety, and that we should be constantly in receipt of letters detailing particulars of events. The official letter alluded to was unquestionably the most indiscreet document we have perused for a long time, but it has tended materially to stir up the question of these companies holding and employing slaves, not only in a legal point of view, but in every way affecting humanity, and so consequently has done infinite good. We quite agree with our contemporary of the *Mining Journal*, who has an editorial article upon the subject, that the "total abolition of slavery will come as surely as there is always a day of retribution for deeds and acts opposed to the laws of God and man." The chairman of this company has the character of being one of the most shrewd men in the city of London, and we can, therefore, only suppose that this celebrated document was issued in opposition to his better judgment. The condition of the slave, whose death alone could remove him from his misery, seems to have interfered but little with the plans devised as the best for increasing the dividends, and the fact is curious, for, as we have before remarked, the great supporters of "universal peace," and professors of philanthropy and brotherly love, are the chief or largest shareholders in this company, and consequently the staunch abettors of all they pretend to deprecate. For the one mercenary object in view, Quakers and Jews, Protestants and Roman Catholics, have joined together, and declared war to the death against the helpless slaves. Let no quarter, they say, be given, and let no man be removed from labour until within an hour of death. All slaves, we are assured, are more or less predisposed to disease of the lungs, and it were superfluous to say that over-work must tend more than anything else to consummate the fatal malady. Formerly, each man was required to break 20 tons of stone per month, but as the yield of the precious metal sought for fell off, the proportion was augmented, until it has now reached the enormous quantity 28½ tons per month, the increase amounting to nearly 43 per cent. This is the main cause of the dreadful mortality which decimates the corps of the St. John del Rey Company, and which threatens to bring the concern to a stand-still. Yet, with all this, it is with difficulty the shipments are kept up. The return for the month of May is 23,383 oitavas. It gives certainly only about 3 lbs. weight of gold less than April, but we are advised that the return of stone was considerably less, in consequence of the diminished number of hands by death, and that the "halvans" (or refuse) were put into requisition to make up the average quantity. It is, therefore, clear that unless a large body of miners be sent out quickly from this country, matters will come to a crisis. On this subject the *Mining Journal* of Saturday has an able article, which we annex. It will be seen that the editor recommends that 500 men should be dispatched forthwith, and to realise the necessary funds, that the 5*l.* per share still unpaid should be called up, and the dividends suspended for a short period. On this point we made comment in a former article, and urged the propriety as well as the humanity of sacrificing temporary benefits for ultimate advantage, either by the issue of new shares or the suspension of dividends; but we are ready to admit that the most expeditious manner of obtaining the necessary funds would be to call up what remains unpaid on the shares. However, we leave the *Mining Journal* to speak for itself as to details.

Our contemporary, in a former article on this subject, inferentially complained that we had not alluded to the management of affairs at Morro Velho with respect to the superintendent. We certainly have received many letters reflecting on the inefficiency of this gentleman. We did not, however, consider it necessary to dwell on his conduct, or to argue whether it be good or bad. We desired to deal with the system altogether, and not with individuals. Of the superintendent we know nothing farther than that he was for many years the secretary in London, and has recently been sent out out to the mines. That the system pursued is bad in the extreme there can be no question, but whether it arises from the inefficiency of the superintendent, the heartlessness and cupidity of the directors, or the apathy of the shareholders, we care not. If it be with the first, let him be recalled; if with the second, let them give place to a more effective board; and if with the last, or the body generally, why then the voice of suffering humanity, and the outraged feelings of a Christian public, must and will bring them quickly to account for conduct so revolting to our nature.

[Here follows the article extracted from our columns.]

MINING PRODUCE AND COINAGE OF AUSTRIA.

In our last Number we gave a statistical account of the mineral produce of some of the Austrian provinces for 1847 and 1848, with an intimation that we should follow it up in our present Number, by a return of the produce and coinage of the precious metals. A late Vienna paper, of considerable authority, contains a very elaborate statement of facts and figures on the production of the precious metals, the amount coined, and the quantity in circulation in the country at the close of 1847. From this source we learn that, during a period of 26 years, from 1821 to 1847, the amount of gold produced from the Crown mines was 36,141 marks, and from private mines, 111,694 marks, making a total of 147,835 marks, the value of each mark being 366½ francs, or 15*l.* 5*s.* sterling, gives an entire value of gold of 2,234,464*l.* The silver produced was 2,465,512 marks, at 24 fr., or 1*l.* each, gives the same amount sterling, of which 1,422,717*l.* were from the Crown mines, and 1,042,795*l.* from private ones. The total of gold and silver produced thus amounted to 4,719,976*l.* The amount of each year's production gradually increased during the period; for, in 1821, the amount of gold was only 3512 marks, while, in 1847, it was 7529 marks. Silver, in 1821, was only 64,398 marks; while, in 1847, it rose to 115,681 marks.

During a period of 50 years, from 1798 to 1847, the total value of gold coined was 174,351,832 fr., or 7,264,660*l.*, and silver, 439,008,080 fr., or 18,292,000*l.*, making a total of 613,359,832 francs, or 25,556,660*l.* The greatest amount of gold coined in one year was 16,708,000 fr., or 696,166*l.*, in 1843; and the least was 54,743 fr., or 2281*l.*, in 1801. The largest quantity of silver coined in one year was 48,873,000 florins, or (the value of a florin being estimated at 2*s.*) 4,887,300*l.* sterling, in 1843, and the lowest amount 2,311,500 florins, or 231,150*l.* The influx of foreign gold to Austria, during the 26 years first mentioned, was 2,000,000 florins, and silver, 2,900,000; and, during that period, the total receipts had doubled, as compared to a like previous period. It appears that all the money coined does not remain in circulation; the most ancient and worn becomes recoined; some portion is employed in the manufacture of jewellery, and a considerable quantity finds its way abroad, not to return, by way of the Levant and Mediterranean to Africa, Arabia, and Persia. The total amount of gold and silver in circulation in Austria, exclusive of Italy, is estimated at 300,000,000 francs.

STIRLING'S TOUGHENED CAST-IRON.

The introduction of the railway system, and the application of iron to numerous gigantic engineering works, arising out of the scientific discoveries and general advancement of the age, has rendered it of the first importance that the utmost strength, both in resisting tension and compression, or crushing forces, of which this metal is capable, should be obtained; and it is also equally important that the engineer fixing on any particular description of iron as qualified for the perfect and safe construction of his undertaking, should, to a considerable extent, be able to depend with confidence on the general properties and quality of the mark he has chosen. Metallurgical chemistry has made rapid strides within the last 30 years, and in the manufacture of iron, perhaps, to a very far greater extent than any other of the metals; by which improvements not only has great economy been secured in the production of the metal from the ore, but iron of higher purity has been the result, possessing in various degrees, according to the locality, strength, toughness, tenacity, softness, or brittleness.

Among the various newly-discovered processes which have marked the present age, and which, from the description of cast metal which the peculiar mode of manipulation produces, is, probably, second to none in value, we would now notice Mr. Morries Stirling's patent toughened cast-iron, without exception the strongest by far in the market, and which is now being most extensively employed for large castings, where great strength is required, and where the powerful quality of the metal may be depended on. We quote from the opinions of some of the first practical iron manufacturers and founders in the kingdom, who say that, from their experience of this iron, they find that its strength is nearly double that of their own No. 1 iron; and that No. 3, by this process, reaches the maximum strength obtainable by cast-iron. What is call No. 3 toughened, under Mr. Sterling's patent, reaches what they believe to be the maximum strength obtained in cast metal, and is much stronger than any iron with which they were previously acquainted. For all architectural and engineering purposes—for columns, girders, heavy machinery, and heavy castings of every description—they consider this iron of the utmost value and importance, and have also expressed the opinion that all such castings will, ere long, be made from it. These expressed opinions are from ironmasters in the several districts of Scotland, Staffordshire, and Wales; and we have been informed by one of the manufacturers in the last-named district, that his No. 2 iron toughened, according to the above patent, is increased fully 60 per cent. in transverse resistance.

A series of experiments were tried, a considerable time since, by direction of the Lords of the Admiralty, from which we find that two girders, made of common iron, sustained respectively weights of 33 and 34 tons before breaking; and two composed of the same iron, toughened by Mr. M. Stirling's process, sustained loads of 56 and 60½ tons previous to fracture. The opinion expressed by the gentleman who manufactured all these girders (Mr. Walker, of Gospel Oak), is to the effect, that a No. 1 hot-blast "toughened" may be made stronger than any cold-blast iron—that good, sound, and perfect castings may be made with equal facility as from common iron, and that even the highest results—viz., 60½ tons, may be surpassed. Mr. Owen, the officer employed to superintend these experiments, expressed a similar opinion. Experiments made at one of the first manufacturing engine establishments in London show an increase in strength in the proportion of 40 to 19; and Mr. Cooper, the eminent analytical chemist, made experiments at Messrs. Maudslay's, by which he arrived at the conclusion, that iron, so manufactured, was 90 per cent. stronger than the same iron, treated in the ordinary way; and he was there informed that previous trials, with somewhat different proportions, had shown an increase of 110 per cent. The most extensive engine manufacturers in Scotland have also expressed their approval, and are using the iron.

From numerous experiments recently made, the results of which we have had an opportunity of inspecting, we find that the above statements are fully confirmed; and, in a communication from Mr. G. Rennie, he states that the strength of Blaenavon iron (one of the strongest irons in the kingdom) is increased 67 per cent. Other trials, made in the presence and under the superintendence of another eminent engineer, were equally satisfactory; for instance, bars of cast-iron, which bore about 800 lbs. in their original state, sustained, when toughened by this process, respectively 1608, 1612, and 1657 lbs.; and other bars, which sustained on an average about 1100 lbs., bore when toughened, on an average, 2338 lbs. We understand also that, by recent experiments tried at the Dundyvan-works, in Scotland, the above results have been amply confirmed on a large and practical scale. Mr. Wilson, the proprietor of these works, and one of the most extensive ironmasters and manufacturers in the kingdom, is a licensee under the patent. Large castings made of this iron are found to lose less in strength, as compared with small castings, than those made of common iron, such castings being more uniform in grain, and not showing that openness or spongyness in the interior which so marks ordinary irons. This peculiarity of structure is an additional recommendation to the patent toughened iron, which will be found highly advantageous when closeness of grain and smoothness of surface are desirable; and although the grain is very much closer, the hardness is not increased to such an extent as to render it more difficult to work in the lathe, or under the chisel or file. The increase in tensile strength we find, from the experiments made, is quite equal to that of transverse resistance, being, in some cases, double, and averaging about 80 per cent.

In general, considering the eminent opinions to which we have had access, this iron may be confidently recommended as superior to all others for strength and durability, and is most applicable for all large works—such as girders, beams, shafting, rolls, cylinders, pinions, cog and fly wheels, railway waggon wheels, and numerous other works. Its applicability for railway waggon wheels is confirmed by the Corrugated Iron Wheel Company having, we believe, specified the use of this iron to several of their founders or contractors. Mr. Stirling has for a considerable length of time been following out his researches into the properties of the various metals; and, in addition to the above important improvement in cast-iron, has a patent for improving the tenacity, ductility, and solidity of wrought-iron, which, with several other matters in connection, we shall notice at a future period.

PROGRESS OF THE IRON MANUFACTURE IN THE NORTH.

While the iron manufacture of the midland counties of England, with those of Wales and Scotland, have become familiar to us, and historical sketches and statistical notices of which continually appear in our columns, there are yet spots in England which have become equally advanced in the progress of scientific mineral development, and a high state of civilization, which, a few years since, were barren wastes, and which are yet but little known to the public generally. Of these are the Consett Iron-Works, commenced in 1841, on a high, bleak, remote, and thinly-inhabited moor land, 15 miles from Newcastle-upon-Tyne, and which, in the course of five years, became covered with 14 blast-furnaces, with machinery and rolling-mills, capable of making 1500 tons of bar and sheet-iron per week. The company built 1300 houses for their work-people; speculators erected many more, and this interesting community now numbers upwards of 15,000 persons. The buildings have chiefly assumed the form of two large villages, at a sufficient distance from the furnaces to be little affected by the smoke. The houses, principally with an upper story, and of good dimensions, are arranged in short rows, with ample spaces between them; and due provision is made for drainage, and all that relates to decency and comfort, together with a good supply of water. Garden ground, of a quarter of an acre, is offered to all who will cultivate it. There are deep covered drains for the main drainage, and brick drains for the surface, and all the roads are made and covered with proper material. The company enclose the gardens, and divide them with quickset. A considerable number are kept with great neatness.

These houses and gardens are occupied by the miners, colliers, and iron-workers, rent free, and there is no covert deduction from wages to render it otherwise; as a proof of which, the average wages of the colliers during the late bad two years of trade have been from 3*s.* to 3*s.* 6*d.* per day, of eight to nine hours; and the miners, up to July last, 3*s.* per day, of ten hours. As security to the workmen for constant employment at a fair rate, the company have reverted to the old Northumbrian mode of yearly hiring; and with a course of open and straightforward dealing on the part of the resident manager and agents with the workmen on the subject of wages, a very satisfactory degree of confidence has been established between them. The latter have seen that, although wages have fallen elsewhere, their own have not been reduced, while the company were engaged on contracts made before a fall of prices. They have, therefore, submitted to reductions, when found necessary, without murmurs, and have had their wages raised without their asking for it.

The two first essentials having been provided for—viz., good habitations and fair wages—the next requisite towards placing a population under favourable conditions for the advance of civilisation, is the establishment of good order. This has been provided for by the company, by their keeping in their pay five policemen (four constables and a superintendent), whose presence, in addition to that of the county police, operates as a considerable check upon disorder. Among their other duties is that of visiting and reporting upon the state of the houses; and, if any are found dirty, or overcrowded, 14 days' notice is given, and if the cause of complaint is not removed, a fine is inflicted, or the family dismissed. The superintendent makes a weekly report on this subject—consequently nothing offensive in any way is allowed to accumulate, and there is nothing in these two large collections of people to repel the settlement there of decent and respectable families. The police keep an eye also upon the public-houses and beer-houses, and report any instances of disorder. The magistrates act in conjunction with the company, in not allowing the number of the former to exceed what may be reasonably required for the population.

The company have established eight day schools in six separate building—two boys' and one girls' attached to the Church, and four boys' and one girls' to the Dissenters. The masters are paid from 70*l.* to 80*l.* per year, and, if married, have a house also. These schools are supported in part by 1d. per week, stopped from the wages of all belonging to the works, the company defraying the remainder of the expenses. They have also provided a library and reading-room, with fire and candles in winter, and the books are in considerable demand. For this penny per week all the children of a family are admitted to school, and those who have no children, or are unmarried, have the benefit of the library and reading-room. Proper medical aid is secured by a small stoppage from the wages and by contributions from the company, making together a sufficiency to obtain the services of four well-qualified medical men.

The high state of tractability and moral rectitude exemplified in the conduct of this community, as compared with others similarly brought together, evinces a great degree of enlightenment, self-command, and forethought in the promoters of the company. They have not exposed the vast capital embarked to the caprice of the crowd, but they began by being thoroughly masters of their own works, and have maintained this mastery by the most legitimate means of scrupulously just, enlightened, and able management. The measures, undoubtedly, cost a considerable sum annually, but, in the end, are economical to the capitalist, and most advantageous, in every point of view, to all parties.

IRON AND COAL DISTRICT OF MARYLAND.

The following is an extract from a letter dated Mount Savage, Alleghany County, Maryland, July 20:—"This is the seat of the great iron works, established some years since by an English company, who, after expending more than a million and a half of dollars, were sold out by the sheriff, and the whole property purchased by a company composed of enterprising citizens of Albany, New York, and Boston, at less than one fifth of the original cost. The property comprises a railroad nine miles long from this place to Cumberland, connecting with the Baltimore and Ohio road three large blast furnaces, a puddling furnace, rolling mill, foundry, a large establishment for making fire-brick, 320 houses for workmen, and a large real estate. The works, with the exception of the fire-brick-yard, are now idle, but the company are putting everything in the best order to resume work as soon as a favourable opportunity offers. At present the price of foreign iron for railroads is so low as to make it impossible, with American wages, to compete, unless some alteration shall be made in the tariff. The price of labour seems to be the only difficulty, as the coal and iron, of the best quality, are dug out of the same mountain—everything else affords the best facilities for competition. This, too, is the great coal region of Maryland, in order to furnish an avenue to which that state has contracted a debt of more than ten millions of dollars. The Baltimore and Ohio railroad, in connexion with the iron company's road, carries down two long trains of coal cars every day; but the great trade will not commence until the Chesapeake and Ohio Canal shall be completed—a work which was commenced before the railroad, but has struggled with every embarrassment for 15 years past, but is now soon to be opened to Cumberland. It is over 200 miles long, and will have cost more than $15,000,000. It was intended to carry out Washington's idea of connecting the waters of the Ohio and Potomac rivers—a scheme, the probable realization of which had no small influence in determining the site of the present seat of the national Government. Congress embarked in it to the extent of $1,000,000, and on account of the district cities, to the extent of $1,500,000 more. As usual, the estimates proved too small. Mr. Calhoun and others, who favoured such internal improvements at that time, changed their views, and Uncle Sam would do no more. The state of Maryland, Virginia, and the private shareholders, were obliged to take the burden upon themselves of carrying the work to this mineral region, where it will stop. It is a splendid work, and had it been carried through to the Ohio, on the same scale, would have been an honour to the nation. The coal will be carried from Cumberland to Alexandria and Washington at a toll of 76 cents per ton, or about a quarter of a cent a mile. As soon as the canal opens, night trains will run from here, and the New York market be supplied with a coal far superior to all others for manufacturing purposes, and for steam-engines. It has less bitumen than the Liverpool coal, burns with a steady bright flame, with scarcely any smoke or soot. A basin of some 30 miles in circumference, formed by Savage mountain on the one side, and Davis mountain on the other, contains throughout an inexhaustible supply of this mineral. The veins just about here are very superior, but not thick, varying from 18 inches to 4 feet. At Frostburg, two miles from here, the vein is 10 feet thick, and has been mined to the extent of over a mile, with some 60 chambers, or diverging passages. I went in to one some distance. It is perfectly dry, slate above and below, and coal on each side, cut out as smoothly as if it had been chiselled. Of course, it is dark as Erebus, and the miners with their blackened faces, and the little lanterns blazing in their caps, look like so many imps of darkness, and the analogy between this and the infernal regions seems to be complete, when you discover at a distance a large kettle, filled with blazing coals, which burns under a shaft, and serves to promote ventilation. The coal is taken from the mines in little cars, drawn by horses over a train road, to the Mount Savage Depôt. The hills are all cultivated to the very top, and better cultivated than in any other parts of the State, since there is no slave labour employed, the Pennsylvania line being too near to admit of this with safety."

Original Correspondence.

A NEW LOCOMOTIVE-ENGINE.

SIR,—I beg to offer to the public, through the medium of your Journal, a few remarks on a locomotive-engine, manufactured by Mr. T. Hackworth, Soho Engine-works, Shildon, Darlington. This engine has been designed and brought out by his son, Mr. John Hackworth, an able and talented engineer, and possesses such improvement in manufacture, principle of working, and economy in consumption of fuel, as justly entitle her to rank beyond any of her contemporaries. The great economy in fuel is effected, I understand, by the superior modification of the slide valves for the introduction of the steam into the cylinders. The engine is of the kind known as first-class coaching engine; she is carried on six wheels, the bearings of the leading and trailing wheels being in the outer frame, which is formed of a wrought-iron slab, 1 in. thick, the axle-guards being in one piece with the frame, and not rivetted, as is the custom. The driving-wheels are 6 feet 6 inches diameter, and have their bearings on the inner frame. The boiler, which is welded, is an unexampled specimen of skilful workmanship, and is without a parallel in the world, being the first ever attempted and crowned with complete success. The heating surface is also very considerable, from the extraordinary size of fire-box and the great number of tubes; the rapidity with which she raises steam, and the ease with which it is maintained at the highest velocity, fully prove that this great principle has been carefully studied. The pumps for supplying the boiler are of an improved construction, which renders derangement and delapidation of the clacks next to impossible, thereby affording the engine greater facilities for running swift trains. The tender is also an admirable piece of work, and uniform with the engine—the frame and axle-guards being formed of a wrought-iron slab, 1 inch thick.

This locomotive engine and tender belong to a very superior class—being such as I have not seen equalled: whether we regard the workmanship or the mechanical skill exhibited in the construction and arrangement of the different parts, they equally reflect the highest credit on the engineer. She has been performing a few experimental trips on the Newcastle and Berwick Railway; and, so far as has been proved, I have no hesitation in saying she is destined to form a new era in the locomotive world. When it was thought the consumption of fuel had been reduced to its minimum point by the latest experiments, another competitor has entered the field; and I am prepared to say the probable amount of saving in fuel will be from 20 to 25 per cent. below the best engines of the present day. This becomes a matter of considerable importance to railway companies, and is deserving of candid examination; the consumption of coke being a serious item in railway expenditure, it is certainly worth the inquiry. In conclusion, I would wish the able engineer a fair field for the trial of his well-digested design; and hope the son will obtain the laurels so ably contested for by the father at the celebrated Rainhill Races, on the Liverpool and Manchester Railway.—EREBUS: *London, Sept.* 13.

COPPER SHEATHING.

SIR,—Although not invited personally to take part in this discussion, I will, by your permission, reply to Mr. Prideaux's questions, put forth in your last Number, taking them in their regular order:—

1. It is not usual to mix oxides or salts of copper with yellow or mundicy ores, but to carry them forward to process 6, enumerated by Mr. Vivian; those ores being free from sulphur need not undergo the previous processes of calcination and melting.

2. There has no alteration taken place from the old method of treating zincy ores; they are brought from Cornwall, and deposited in layers—viz., one cargo over another, which is considered a fair mixture.

3. There have not been sufficient trials made of the ores which make *bad* copper. The Wheal Maria and Cobre are considered the two worst ores in the market for that purpose, but I can assure Mr. Prideaux, from a series of experiments of my own, that a mixture of two-thirds of the former and one-third of the latter, with an additional calcination of six hours in the first process, and by carrying them through the different stages quite separate from any other ore, they will produce as good copper as any brought into the market.

4. The smelters *do* regard the quality of the ores in the ticketings, which I doubt not the proprietors of the Wheal Maria and Cobre Mines can testify; but let those ores be treated as described in No. 3, and I will vouch for the quality of the copper, but I would recommend those companies to pulverise their ores to a size that will pass through a three-hole to an inch sieve, so that the air and heat would have a greater effect on smaller than larger particles in the first process of calcination, and, therefore, tend to carry away a greater proportion of the sulphur, with which they so much abound.

5. The average of Cornish ores is from 7½ to 8 per cent., but the foreign and Irish ores, sold at the Swansea ticketings, average from 19 to 20 per cent. I have never known ores of too high per centage for our processes—for instance, supposing we have ores of 60, 70, 80, or even 90 per cent. of copper, they are chiefly oxides, carbonates, and sometimes native copper; and if the two former, we mix them with the metal either in five or six, but if the latter in seven processes, as described in Mr. Vivian's paper, but this will, of course, depend on the purity of such ores; ores of 1 and 2 per cent. will not pay either the smelter or the miner, as they do not cover the returning charges, which is made up in Cornwall at 2*l.* 10*s.* per ton.

6. There have been no particular changes taken place in the process since 1823; but we are more particular than our ancestors were in returning all the foul slags, which abound with iron, &c., and which, of course, deteriorate the quality of our copper. The nominal improvement in sheathing prior to 1786 must have been owing to the discovery of mines producing superior quality ores. Our Cornish ancestors, previous to 1700, knew nothing of pulverising and dressing their ores, but merely hand-selected the best quality for their smelting processes, throwing aside, into large heaps, or *burrows*, all the inferior ores which were contaminated with mundic, zinc, sulphur, &c.; but about 1823 the miner began (when copper was of more value than it is now) to turn over those heaps, taking away the greatest portion of them to their stamps, where they managed to wash off most of the earthy and light matters, but still could not separate the mundics, &c., from the ores. These ores, more or less, have been brought into the market ever since; and hence the complaints of the quality of the copper since that date.—A ROASTER MAN: *Swansea, Sept.* 13.

MANUAL POWER *v.* HORSE AND STEAM POWER.

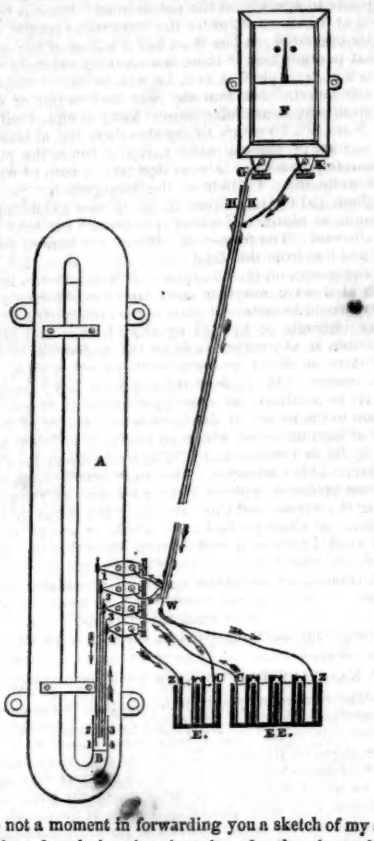
SIR,—Your correspondent, Mr. Motley, has not answered my question in his epistle, which appeared in the last Number of your interesting Journal, but rather seems to treat the idea of stone tracks as an *unstable, extravagant plan*. I think, however, before I have travelled far in this discussion with Mr. Motley, he will find that I shall prove the stone tracks far more economical, and infinitely more stable, than any timber track he can produce. It is well known that all attempts at wood paving in London, after fixing the wood fibres at almost all angles with the horizon, in one and all these experiments, each one has proved that timber, for such purposes, is both indurable and impracticable. Not only is it the case with wood paving, but also with timber bridges, railway sleepers, and all other timber structures; the general repairs, in all instances, averages from 6 to 7 per cent. annually on the original outlay; the wood paving *about* 40 *per cent.*

Now, Sir, the granite track road I mentioned in my letter in the *Mining Journal* a short time since, has been laid down about 30 years, and I suppose that over this road no less than from 12,000,000 to 14,000,000 tons of granite have been transported, consisting of blocks of from 2 to 6 tons each, merely suspended between two wheels, and only bearing on two points of the road alone at one time. I beg to ask Mr. Motley, what would become of his timber tracks under similar circumstances?—but this question I will answer for him—viz.: *his road would have been converted into a bundle of matches in one-tenth the time.* Yet, Sir, with these enormous loads, and the period it has been in operation, 800*l.* expense would put the seven miles of granite tracks in good repair at the present time. Mr. Motley denounces granite, or limestone, tracks as an extravagant plan; but, Sir, in my opinion, the tracks I propose will be found much cheaper in the original outlay than timber ones. Mr. Motley will find that, if he makes his tracks of oak, they will cost at least 3*s.* 6*d.* per cubic foot, and the most common American, or Baltic timber, at not less than 1*s.* 6*d.* per ft., "exclusive of carriage, and without labour," or, including the labour, the former would cost about 4*s.* 3*d.*, the latter 2*s.* 3*d.* per cubic foot. We will, then, suppose one of Mr. Motley's tracks to be 1 ft. 6 in. wide, and 1 ft. deep, with oak timber; one line of tracks would cost 12*s.* 9*d.*; the other (which would be useless) 4*s.* 10*d.* per lineal foot. If the timber is prepared either by Payne and Loder's, or other anti-dry rot process, 8*d.* per cubic foot must be reckoned, in addition to the above prices. Now,

on the extravagant plan I propose for tracks of the same dimensions, the cost of the stone at the quarry, inclusive of dressing, ready for laying down, would be about 10d. per cubic foot, exclusive of carriage. Now, Sir, of my "expensive" plans you and your readers can form an opinion; besides which, I may mention another great advantage possessed by stone tracks; when the stone is worn, and becomes irregular, it can be again dressed to the requisite form, while wood paving admits of no such treatment. One more remark I would make ere I leave Mr. Motley—viz.: that as locomotion on common roads is now becoming a topic of general conversation, I trust that we shall see a good stone track laid down for the first road locomotive to run upon; then success is certain. It has been stated that granite tracks will not give sufficient friction to the wheels, but a little sand would overcome this objection. CIVIL ENGINEER.

Ashburton, Devon, Sept. 11.

PREVENTION OF EXPLOSIONS IN COAL MINES.



SIR,—I lose not a moment in forwarding you a sketch of my apparatus for the prevention of explosions in mines, in order that those who are disposed may prove its efficacy. A, the ordinary barometer, which may be encased in an iron tube, or box; 1, 2, 3, and 4, four adjustable platina wires, in connection with four binding screws, and leading down into the glass tube, the wires 1 and 4 being the longest; E and E, E, a small and large constant battery; F, the galvanometer; G, the insulated conducting wire, its leaden coating, H, H. The action of the apparatus will be as follows:—On the sudden fall of the mercury in the tube, which happens when an accumulation of fire-damp is taking place, the mercury at B will rise, and make contact between the wires 1 and 4, which will cause the electric current of the small battery to be brought into action by the electricity passing from the copper in the direction of the arrow up through the wire, W; thence onwards to the binding screw and wire, G, returning by the binding screw, K, to the leaden tube, in the direction of the arrow, to the binding screw, 1, onwards by the platina wire, through the mercury and the wire, 4, to the zinc end, thereby completing the circuit, and holding over the indicator to the right, thus giving notice that the gas is accumulating. Now, as the gas accumulates, the barometer will continue to fall, and, consequently, the mercury at B will rise still higher, until it comes into contact with the wires, 2 and 3, when the larger battery will be immediately brought into action by the current passing from the copper in the direction of the arrows to the binding screw, 3; thence by the wire and mercury to the wire and binding screw, 2, and onwards by the leaden tube to the binding screw, K, returning through the wire, G; W enters in the direction of the arrow to the zinc, completing the circuit in an opposite direction, and overcoming the power of the small battery, E, causes the indicator to pass over to the left, thereby giving notice of extreme danger. An alarum can be placed in the circuit if desirable, so as to obviate the necessity of watching. It is well known that a constant battery can be made to last eighteen months or two years without any attention. The cost of renewing the battery power once every two years will be about 12s. 6d.—GEORGE LITTLE: *Melton-crescent, Euston-square, Sept.* 12.

DETECTION OF FOUL AIR IN COAL MINES.

SIR,—Numerous as have been the suggestions which have appeared from time to time in your valuable Journal, for the purpose of obviating those terrific disasters caused by explosions in coal mines, it is still pleasing to see that parties connected with every branch of science are now directing their attention in order to devise some means of warning the collier of danger, in time to secure his retreat, or to take requisite caution, to prevent the re-occurrence of those hideous catastrophes which so frequently throw a gloom over a whole county, and fill so many houses and families with sorrow and misery. The husband and sons so frequently leaving their homes cheerful and happy; but alas! are so often carried home blackened corpses. It was observed, after the fatal explosion at Aberdare, scarcely a house in the neighbourhood that did not present a scene of grief and sorrow; and with these horrible pictures of misery and distress before an enlightened community, it is but natural that every spark of sympathy should be awakened, and every known resource of science resorted to, to devise some means to warn the collier of danger, in order to secure his safe return to his family and friends.

From the numerous discussions and parliamentary inquiries that have taken place on this subject, but little practical good, it is feared, will result; but as the carburetted hydrogen gas will always exist in the mines, and in proportion to the quantity generated, if we can devise some means to detect its presence in any and every part of the mine, merely by bringing into action the unerring laws of Nature, it is only reasonable to suppose that, if the workmen can see their danger indicated on a dial before they descended into the works, every precaution would be taken to avoid being immolated. It appears to me that an electro-barometric gage indicator, similar to the one suggested by your correspondent, Mr. G. Little, might be made to denote the presence of carburetted hydrogen, or if not the actual presence of the gas, such an apparatus, under all circumstances, would momentarily inform all parties connected with the works of the atmospheric change, when indicated by the barometer. Such an apparatus would be of the most simple character, consisting of a barometer of the ordinary form and size; over the orifice of the glass tube would be fixed a gutta percha cap, with an aperture sufficiently large to admit free action of the atmosphere upon the mercury. Through the gutta percha cap should be inserted four platinum wires, two of which should be placed within one-tenth of an inch of the mercury—premising that at the time the apparatus was fixed in the mine, the mercury on the surface indicated a healthy state of atmosphere, and the works to be in a good state of ventilation. The other two wires should be fixed at a distance of half an inch from the mercury, and then the four wires to be connected with two small constant galvanic batteries. The movement of the quicksilver, by an atmospheric change, would form contact with the first set of platinum wires, set the battery in action, and, by the aid of a small galvanometer and an alarum bell, caution would be immediately given to any part of the works or to the surface. The galvanometer and alarum bell might be fixed in the engine-room, or any other part of the premises where it would be observable by the persons there employed; the bell would ring, and the needle of the galvanometer would at the same time be deflected.

The sudden fall of the mercury rising in the short tube to the second set of wires, would put the second galvanic battery in action, which, of course, would set the second alarum and galvanometer in motion; and this battery would denote the sudden and great atmospheric change which had taken place. This being observable, as before described, caution would be given to every person employed in the mine, when precautionary measures would, of course, be adopted to avoid accident; and it is only natural to presume that if these precautions are taken from the barometrical indications, that the amount of these sad disasters will be materially reduced. The bases of my argument are founded on the valuable table which appeared in the *Mining Journal* for March 4, 1848, p. 113, from Prof. D. T. Ansted, in which it is stated that, out of the 62 accidents there recorded, only five explosions occurred without the barometer giving some indications; whilst, in the majority of the accidents, it has exhibited great variations; and I should say, in most cases, sufficiently to give notice of the approaching danger. A second communication on this important subject, is from Mr. E. W. Binney, p. 101 of the same year, where that gentleman observes as follows:—"By examining the times of the occurrence of the accidents, with a record of the changes of the barometer, many of the former will be found to have taken place when that instrument marked the lowest pressure of the atmosphere, and more especially on the occasion of a sudden fall, after it had stood high for a considerable time. The late accident at Heathfield, near West Bromwich, recorded in your columns, by which a number of valuable lives were sacrificed, *is a proof of the connection of explosions of fire-damp* with depressions of the barometer. This lamentable event took place on Wednesday morning, Feb. 9th, 1848, at about 6 o'clock a.m. By consulting the published barometrical observations, it will be found that the mercury stood at 10 o'clock a.m. on the 8th instant, at 29·69 in.; at 4 p.m. of that day, it had fallen to 29·53; at 12 o'clock at night to 29·10; whilst at 10 a.m., on the 9th, the *day of the explosion*, it had gone down to 28·63—thus showing a depression of 1·04 of an inch in 24 hours, and the maximum depression about the time of the *accident*." In the same communication, Mr. Binney states—"No scientific instrument is of greater value than the barometer to the owner and overlooker of a colliery; and no establishment ought to be without one placed near each upcast shaft; and both overlookers and men ought to be directed constantly to observe it, and regulate the ventilation of the mine according to it." Now, Sir, the electro-barometric indicator proposed, will indicate every change in the barometer, whether rise or fall, as contact, in each instance, would be made with the galvanic battery, as described. This would call the attention of all parties to the changes; and caution would be taken accordingly.

I would suggest that two or more of these apparatus should be laid down in every mine, with the wires laid to the surface, when the requisite alarum and galvanometer should be attached, and by the side of the apparatus should be fixed a second barometer, which would at all times show if the changes in the mine corresponded with the atmospheric changes at the surface.

In conclusion, I beg to put the following question, as, no doubt, some of your numerous scientific readers may have made the experiment:—Suppose a barometer to be placed in an atmosphere in a mine, to be composed, for instance, of eight parts of air and one part of carburetted hydrogen gas; a second barometer, at the same time, placed in the common atmosphere, whether the one would indicate the same degree of density and pressure as the other, or whether they would differ, and what the difference would be, supposing the thermometer, in both instances, to be the same? If any difference in the state of two such atmospheres exist (and it is my firm belief that such is the case, but to what extent I am not aware), we shall, under such circumstances, have no difficulty in making an apparatus to detect the presence of gas in any part of the mines, and also of its degree of mixture, both in the new and old workings, which may be subject to danger. Perhaps your worthy correspondents, Prof. D. T. Ansted, Dr. Murray, or Mr. Robert Hunt, would be kind enough to favour us with their opinions on this important subject.—G. SHEPHERD, C.E.: *Sept.* 12.

IMPROVED MANAGEMENT OF IRON-WORKS.—No. II.

7. The best *talent, experience,* and *labour,* will always be at the service of the ironmaster who may adopt the plans under consideration. Such masters will then be at a *certainty* at all times, with respect to the whole of his materials, processes, apparatus, and desired results, and be able to safely, accurately, and instantly, in a manner, calculate as to *quantity, quality, yield,* and *cost* of all his objects of manufacture.

8. A greatly improved race of manufacturing and mining *managers* and *operatives* would be originated, and constantly retained, throughout all the departments of the general work, whose interest it will be to make the best and most economical use of all raw and unfinished results, and all tools, machines, and apparatus, and likewise to prevent waste or damage, in any shape or form, as well as to materially abate idleness, lying, and many other vicious and immoral customs and acts, now but too common about, not only iron, but many other extensive works and manufactories.

9. All *nightwork,* and *out-of-sight* or *chemical processes,* blast-furnace and puddling operations in particular, would, under the proposed new system of management, be conducted with equal precision, care, and economy, as if constantly under the master's eye—points that can never be effected, as works are at present carried on, even in the best-regulated establishments, to say nothing of "joint-stock" concerns, where *cooks* out of number, in a manner, frequently have quarrels and disputes for the "last word" without end, or to shift imputed blame from their own shoulders, at any expense or risk to others. Your Journal has, unfortunately, too often recorded *squabbles* of the kind alluded to—to which "squabbles" there will never be an end, until the proposed "new system of management" takes the place of the present slovenly and unscientific modes of conducting the works under consideration.

10. By these new arrangements, there would be no time ever lost for the want of materials or labour in carrying on all the departments of a work, be it ever so extensive or complicated, *constantly* and *efficiently,* from year's end to year's end; neither need ironmasters be under any great anxiety as to their yields, processes, or property; for it will be the particular and special interest of every individual engaged in the *working companies,* about to be described, to turn out all results in the very best possible manner, in the shortest periods of time, and at the least possible cost—objects that can never be fully realised under the present uncertain and loose systems of management at iron-works—"systems" which are vainly attempted to be carried out *per force,* as it were, and not *per influence,* by one man aiming, or being expected, to do the work of 50.

11. By a general adoption of the principles and practice now proposed, there would be effected a *national* saving in *coal* and *iron* alone to the amount, in the aggregate, of millions of pounds sterling annually—a point of the highest consideration in Great Britain, where the *quantity* of the minerals in question may be said to be *numbered,* and the *population,* whose power and prosperity entirely depends upon having due supplies of such minerals *infinitively,* in a manner, increasing. It is incredible the thousands of tons of *small coal* that may be said to be wasted at the iron and coal-works of Monmouthshire and South Wales! This *need not,* and, therefore, *ought not* to be.

12. Local insurance offices to be instituted for affording compensation and medical aid and support to miners and others, and their families, engaged about the several departments of the work, in cases of accident or death—a certain sum being contributed from all wages and salaries for that purpose; and insurance premiums to be calculated for days, weeks, months, or years, and paid by individuals at their pleasure, for securing compensation, by some fixed sum, or by way of annuity, in cases of accident, more or less, according to the nature or extent of the same. By these equitable arrangements, which would be far more advantageous to workmen than "benefit societies," the proprietors of iron-works would be entirely exonerated from all responsibilities, in cases either of maimings or death, in carrying on their respective establishments, be they ever so extensive; for the *members* and *funds* of the different "working companies" would be exclusively answerable for all casualties of the kind alluded to, pecuniarily, legally, and morally.

An extensive *iron-work* should be subdivided into (say) *five* distinct departments, with a *store yard,* &c., somewhat as follows—viz.: 1. A company of *miners,* &c.; the same to be managed by a staff of operatives, under proper "rules and regulations," as stated below.—2. Furnaces, coke yard, mine and lime kilns, foundry and finery company.—3. Mills and forges company.—4. Company of smiths, roll-turners, fitters, engine-making, &c.—5. Company of masons, brickmakers, carpenters, pattern-makers, &c. A general store yard of proprietors of the work, for the supply of timber, oil, and other things necessary for efficiently carrying on the various branches of the general establishment. Transfer books and accounts, for facilitating calculations as to cost of all things, and also to secure to the ironmaster the constant custody of all property under manufacture, from the raw material to finished results. "Houses of call" for labourers, &c., to be established at the different iron-works on temperance principles. No beer-houses, and but few public-houses. A good market, or bazaar, to be instituted, for the convenience of the members of the "working companies" in question. This is a point well deserving the serious attention and best patronage of every considerate ironmaster.

The following extract, from a Trinidad newspaper, would make it appear that the *spirit* of the suggestions contained in this communication, has shown itself in other parts of the world than on the "mountains of Wales;" therefore, as the observations in the extract alluded to (which relate to the management of sugar-farms, or plantations, exclusively), are very much to the purpose, I do not hesitate to make a repetition of them for the benefit of the numerous parties interested in the prosperity of the iron trade of our country, or indeed of any other of the extensive and important *mining, manufacturing,* and *railroad* establishments of the United Kingdom—viz.: "We would again suggest, and earnestly urge, the adoption of a measure which could not fail to alleviate, at least, the evils experienced by pinched proprietors, whether these proprietors be individuals or mercantile firms. Our plan is, to rent, or lease, properties to practical parties, if they can be found; and we have good reason to believe that such are not wanting. The tenant, having a direct and deep interest in the property for the time being, will, undoubtedly, devise, labour, and economise more than a salaried manager and attorney. Were we to put on paper the negligence of the one, and the rascalities of the other, perpetrated in these parts, we would 'a tale unfold.' If the existing sugar estates in Trinidad are ever to prove profitable to their proprietors, they must be transmuted into tenant farms, and transferred to those who, from interest and necessity, will personally superintend every important operation. How few landed proprietors in Britain are gainers, or rather saved from serious loss, who keep their property in their own hands, unless it be of limited extent? Tenants are the working bees in the proprietary hives. Let Trinidad proprietors rent their estates, if they cannot work them with advantage, or without loss. By adopting this step, they might live as well as let live. We have much to say on this subject, which we deem of great importance; but we must wait another opportunity."—Copied from the *Weekly News,* of Sept. 8. S. B. ROGERS.

Nantyglo, Sept. 10. [*To be continued in next week's Journal.*]

IMPROVED HOT-AIR ENGINE.

BAGGS'S PATENT.

SIR,—The majority of engines actuated by heated air, which have hitherto been brought before the public, have owed their efficacy to the alternate dilatation and contraction of atmospheric air confined in close reservoirs. The two air-engines patented in 1827—the one by Stirling, the other by Parkinson and Crossley—are illustrations of the application of this principle. In both of these an alternation of heat and cold is caused to operate upon two imprisoned volumes of air, and the engine is worked by differential elasticity, resulting from change of temperature. Occasionally this principle has been departed from. The engine recently invented by Mr. Galloway, and called by him the "fumific impeller," is an instance. Here a close furnace is introduced, and the essential point of novelty lies in causing the products of combustion to operate directly in producing power, upon the principle of the common rocket, and without the intervention of any machinery. The close furnace had been previously employed by Count Adolph Eugene de Rosen, in his patent of 1826. In this invention, the hot air arising from combustion was made to generate steam, by passing over a series of shallow trays containing water.

The invention which forms the subject of the present communication is entirely different from any of those I have named. Its general character, and *modus operandi,* are more analagous to those of the high-pressure steam-engine. I am very well aware that all novelties referring to the production of motive-power are apt to be treated with a degree of scepticism; but still my faith in the practical soundness and utility of this invention is so completely fixed, that I will not now be content with offering such a mere plausible outline of its theory and construction, as may be contained within the brief limits of a legal specification; but I will give a better earnest of my real belief, by testing the truth of its principles in the strictest and the most scrutinizing manner which I am able to devise. Convinced as I am of the accuracy of my position, I will endeavour to pursue so close and sifting a train of argument, that there shall be no room left for hypothesis or conjecture; and, by such a proceeding, it will at once become evident that I am rather inviting the arrows of criticism, than seeking in any way to avoid them. To others will then remain the task of either showing, by good plain logical reasoning, the falsity of my premises and inductions, or of honestly acknowledging their correctness.

The two very obvious and primary considerations in a matter of this kind are practicability and economy, and I will begin by investigating the question of economy. Let us ascertain what is the relative expansive power given off from water and air by the expenditure of a given quantity of fuel. And suppose we take the case of a locomotive engine, evaporating 200 cubic feet of water per hour. Each cubic foot requires the consumption of 8 lbs. of coke, and is then converted into 1728 cubic feet of steam, having a pressure of 15 lbs. to the square inch. *The result, therefore, is, that* 1600 *lbs. of coke evaporate* 200 *cubic feet of water, and produce therefrom* 345,600 *cubic feet of steam at the pressure of the atmosphere.* Now, what will be the result, if we apply the combustion of the same quantity of fuel to the expansion of air? I will adopt four different methods to arrive at this, and though the results will be found to present some discrepancies, yet they are every one in favour of air as the more economical agent. Before, however, we proceed to answer this question, it is absolutely necessary that a clear understanding should be arrived at concerning the actual amount of expansion which air undergoes by a given increase of heat. It has been generally considered that a volume of air, or gas, expands by heat $\frac{1}{490}$th of its bulk for each degree Fahr. The more recent experiments of Regnault, however, have fixed the rate of expansion at $\frac{1}{480}$th part for each degree, and this ratio of cubical increase in æriform bodies, subjected to the operation of caloric, has been adopted by Tredgold, and other high authorities. The precise measure of expansion, however, here laid down only holds good, *in an absolute sense,* when the experiment is commenced with the thermometer at zero, for a little consideration will show very clearly, that the denominator of the fraction increases regularly with each degree of thermometric elevation; so that *a volume of air, at the temperature of* 60°, *will require the addition of* 519° *of heat before its bulk will be doubled.* I shall, therefore, employ this number (519) in the following computations, and this being premised, I will now endeavour to show the superior economy of air:—

First, by means of an accepted standard of comparison.—It is a received element in engineering calculations of this particular character, that .00000184 lbs. of coke will heat 1 cubic foot of air 1° Fahr.—consequently we find by the simple rule of proportion, that the 1600 lbs. of coke consumed in our locomotive engine, and generating by combustion, 345,600 cubic feet of steam, at the pressure of the atmosphere, would be capable of *producing an expansion of* 1,675,462 *cubic feet of air*; or, in other words, of doubling this said volume, by the addition of 519° of heat, for 1600÷(.00000184 × 519) = 1,675,462.

Having thus ascertained the relative measure of expansion of steam and air by the ordinary method of reckoning, I will proceed to make a *second calculation, founded upon data supplied by the experiments of Mr. Goldsworthy Gurney.* This gentleman states, in his evidence before the Lords' Select Committee on the ventilation of the Houses of Parliament (second report), that on referring to experiments made by himself some years since, he finds that a pound of charcoal will heat 1000 cubic feet of air from 60° only to 500°. Here the stated increase of heat is 500°—60° = 440°, which, multiplied by 1000, gives a total elevation of temperature from the combustion of 1 lb. of charcoal of 440,000° Fahr. referred to the capacity of air; or, which is the same thing, a quantity of heat sufficient to raise the temperature, by 1° Fahr., of 440,000 cubic feet of air—consequently, if this is the result when 1 lb. of charcoal is burnt, 1600 lbs. of charcoal are capable of heating 704,000,000 cubic feet 1°. Dividing this last number by 519, we obtain 1,356,454, *equal to the number of cubic feet capable of being doubled in bulk by the expenditure of* 1600 *lbs. of charcoal.* The impure description of carbon burnt upon the fire-grate of a locomotive would not, perhaps, produce quite so high an effect as is here stated, but the difference would be so small, that it may be quite disregarded in the present estimate.

The third calculation rests upon data derived from the doctrine of latent and

specific heat—200 cubic feet of water weigh 12,464 lbs.; 216,600 cubic feet of air weigh the same quantity. If heat operated upon bodies in proportion to their weight, the amount of caloric given out by the combustion of one, or two, or more pounds of charcoal, would affect these two identical weights of air and water in an equal degree, and the thermometer would be similarly affected in each instance. But it is not so! A pound of air requires a far smaller quantity of caloric to elevate it a certain number of degrees in the thermometric scale than the same weight of water does. In fact, the specific heat of water is to that of air, *by weight*, as 1·0000 to 0·2669. Therefore, as 0·2669 : 1·0000 :: 216,000 : 811,539, and this last quantity represents the number of cubic feet of air precisely corresponding to 200 cubic feet of water in capacity for caloric—that is to say, the same absolute measure of heat would elevate the temperature of either of these quantities of air and water to the same degree of the thermometric scale.

Now, it is admitted on all hands that, when water is converted into steam, it absorbs, or renders latent, 1000° of heat referred to the standard of water. If, therefore, we multiply the last-named quotient, 811,539 by 1000, we shall have the absolute number of degrees *referred to the standard of atmospheric air*, which an equal weight of water would absorb in being converted into steam—namely, in passing from 200 to 345,600 cubic feet. This number, then, is 811,539,000; and, divided by 519, it gives us 1,563,658 the cubical expansion, or the volume of atmospheric air, which may be doubled in bulk by the expenditure of 1600 lbs. of coke. I am aware that very few of those experiments which have been made to determine the specific capacity for caloric, possessed by different aeriform bodies, are entitled to great confidence. The subject is beset with considerable difficulty; but still the experiments of Delaroche and Berard were conducted with so much care and delicacy, that their results are generally regarded, to say the least of them, as tolerable approximations to the truth. It is from their tables that the numbers here employed have been taken; and the close approximation of the estimate of economy obtained through these means to the two preceding ones, elicited from other sources, not only tends to confirm the fact which I am now endeavouring to prove, but naturally increases our confidence in the accuracy of the experimentalists. *The last method of calculation which I shall employ is dependant upon incontrovertible chemical principles.* What is the minimum quantity of atmospheric air passing through the furnace of a locomotive per hour; and what is its temperature?—1600 lbs. of coke are consumed within that time, and 345,600 cubic feet of steam generated.

Now, for every atom of coke consumed, 2 atoms of oxygen are required to form carbonic acid gas; and as the equivalent of carbon to that of oxygen is as 6 to 8, we have the proportion as 6 : 16 :: 1600 : 4266; 4266 lbs. of oxygen gas are required, therefore, to pass through the furnace to produce the above effect. This is equivalent in cubical measurement to 50,827 feet; but the atmosphere consists, by measure, of 1 volume of oxygen to 4 of nitrogen; therefore, 50,827 multiplied by 5, or 204,135 feet of atmospheric air, necessarily enter the furnace. Now, what is the temperature of this air after combustion? The heat of a parlour fire, according to Daniell's pyrometer, is equal to 1141° Fahr., and the melting point of cast-iron is 3479°. I think if we assume that the temperature of the furnace is 2136°. Fahr., we shall be rather under than over the mark, for the blast is so powerful that the fire-bars have occasionally melted and dropped in the road. From this number, then, substract 60°, the temperature of the air before combustion, and divide the remainder by 519, the quotient is 4. The burnt air, then, is rarefied to five times its original bulk, and the four extra volumes are gain. The total expansive effect, therefore, is 204,135 × 4 = 816,540 cubic feet; and it must be recollected that this result is derived from the minimum quantity of atmospheric air which can possibly pass through the furnace, in order to consume 1600 lbs. of coke, unless, indeed, some trifling per centage of loss is allowed for impurities and imperfect combustion. [*To be continued.*] ISHAM BAGGS.

ON THE GENERAL SYSTEM OF ATMOSPHERIC TRACTION.

SIR,—The able and elaborate observations of Mr. Isham Baggs, on the merits of the tractive and propulsive systems of atmospheric transit, have stopped short of that definitive information needful to strike a balance between the values of the two systems, or to make a just comparison between either and the usual locomotive. If, on a level line, the ordinary locomotive may be taken at par with either of the other systems, it seems possible that the particular or exact gradients, on which either atmospheric system assumes the superiority may be determined; but the weight of train, its required speed on the level, and on any gradient to be ascended, must be known, and on which data the estimate would be simple enough.

In my view, Mr. Baggs has not gone sufficiently deep into general principles to evolve the advantages of either. That of compressed air over the vacuum system is chiefly assigned in the one permitting the longitudinal slit in the tube to be more perfectly closed than the other. If the matter which encloses the aperture were non-elastic, the greater the pressure the more would be the leakage, and, consequently, the waste of power in case of the orifice not being perfectly air-tight; but the matter used being elastic, the advantage of the pressure system in the respect mentioned, would seem to be rather the effect of using a material for the covering valve, of which the elasticity is better adapted to the pressure, than has been used by the projectors of the vacuum system.

From the data of Mr. Baggs, the waste of power on the Dalkey extension line, or its equivalent, the leakage per minute of the vacuum tube and connecting pipe, was equal to a total of 1035 feet of air, with a pressure of 5 lbs. to the in., the value of which leakage being barely $\left(\frac{5 \times 144 \times 1035}{33{,}000}\right)$ = the power of 23 horses. The engine-power not being given, nor the weight and speed of the train, nor the gradient (if any), little useful information is derivable therefrom; but there is another point of leakage, that of the piston, which cannot be expected to be constantly air-tight. The greater the pressure thereon per square inch the more will be the leakage; in the condensed system the pressure is 45 lbs., and on the vacuum principle only (15—10 =) 5 lbs., being as 1 to 9. If the diameter of the respective tubes be of the proportion given, or as 2 to 1, the leakage from the compressed-air piston would be to that of the vacuum piston in the proportion of $\left(\frac{1 \times 45}{2 \times 5} =\right)$ 4·5 to 1, and, therefore, it is questionable whether the reputed advantages of the compressed system, as to leakage from the longitudinal slit in the tube, may not be counterbalanced by the superior leakage of the piston. As to the cost of the tubes, if their thickness be proportional to the stress suffered, that of the smaller pipes will be the same as the larger—therefore, in this respect, the compression system offers no advantage over the other.

In carrying out a comparison, other matters present themselves, which have not received notice from the mechanicians who have taken part in the investigation of the principles of atmospheric locomotion.

If a non-elastic fluid, as water, were employed, instead of atmospheric air, it would have the advantage as to power in the given case of 1·7 to 1—for, supposing the forcing pump of the same diameter as the tube which receives the compressed air, the train would travel at the same speed as the forcing piston when water is employed; but when air is used of the pressure of 45 lbs. per inch, or of three atmospheres, then for every 4 feet of the stroke of the forcing piston the train would travel only 1 foot, for the first 3 feet of the stroke would be expended in raising the elastic pressure of the air from 0 to 45 lbs. per inch. The power expended in the case given would be as follows:—Water pressure, $4 \times 45 = 180$, the power whilst the train moves 4; air pressure $4 \left(\text{(hyp. log. } 4 + 1) \times \frac{45 + 15}{4}\right) - (15 \times 4) = 77{\cdot}16$, the power when the velocity of the train is 1; therefore, at the speed of 4, the power would be 308·64, and $\frac{308{\cdot}64}{180} = 1{\cdot}7$. That is, when the power expended by a non-elastic fluid is 1, the power by an elastic fluid in the case given is 1·7. The difference, or 0·7, may be said to be bottled up in the tube, when the train has completed its journey, and there being no purpose to which the bottled up air is to be made serviceable, it is suffered to elapse, and waste its energies to no purpose, being equivalent to a waste of so much fuel.

We now come to the saving point, which has induced me to offer this paper to the *Mining Journal*, and which arises from a natural abhorrence of wasteful expenditure in mechanical pursuits. Mr. Baggs has advised the use of Cornish pumping-engines in the compressed-air system; but between pumping water and air there is no parallel. In pumping water the work is intermittent and variable; for at each stroke of the pump the column of water is moved from the rest and put in motion, and, as the motion is increased, the resistance is reduced, or, what is equivalent thereto, the same pressure on the piston produces an increasing velocity. The expansive principle is, therefore, peculiarly adapted to the purpose of raising water, because the pressure on the piston is reduced as the piston progresses within the cylinder.

When air is pumped and compressed the case is reversed; for when the steam is of the greatest pressure on the piston, the resistance of the forcing piston is the least, and when the steam piston has completed its stroke, the pressure of the steam thereon being the least, the resistance to the forcing piston of the pump is the greatest. For this reason it is "that the working of the machines used on the South Devon Atmospheric Railway was so unsatisfactory;" but if the same principle were carried out in the compressed-air system, the expense of fuel would not only disappoint Mr. Baggs's expectations "*in the utmost possible degree*," but, if such were possible, it would be exceeded.

Then, instead of imputing the disappointment to the parties employed, or of assigning any peculiar privilege to the founderies of Hayle, or of extraordinary tact as to the designs and superintendence of regular Cornish engineers, I venture to say, had the best of them undertaken the job, but with which I do not believe any one would have engaged, the failure would have been equally fatal as to the wasteful expenditure of fuel. It appears by Mr. Baggs's communication, the coal consumed per horse power by the locomotive, condensing and Cornish engines, is in the proportion of 8, 5, and 1½ lbs.—the comparison by the two latter being as 3½ to 1; but on reference to a paper by the very Mr. Wicksteed, in vol. xli., page 310, of the *Mechanics' Magazine*, and who Mr. Baggs has mentioned as an authority, the proportion is as 220 to 100, being only 2¼ to 1. The extra consumption of fuel in locomotives is occasioned by the density of the steam being out of due proportion to its temperature and pressure, as is provable by the quantity of water evaporated. This is occasioned by the small surface of water in the boiler, as compared with the heating surfaces. The effect, as to consumption of fuel, is the same as if the boiler were constantly priming—therefore, as respects the half-yearly dividends, the sooner the evil is remedied the better it will be for the shareholders, who, although grumbling so loud as to heard at the four cardinal points of this island, remain as obstinately deaf to reason as to their own interests.

Upper Penton-st. Sept. 10. JOHN CURR.

ON THE GENERAL SYSTEM OF ATMOSPHERIC TRACTION.

SIR,—I read with much pleasure an ably-written letter, signed "Isham Baggs," in your Number for Sept. 1st, on the subject of "The General System of Atmospheric Traction, and M. Piatti's Method of Propulsion by Compressed Air." With the observations with which he commences his letter, all cannot fail in cordially agreeing; for there cannot be the slightest doubt in the mind of any one that, had railway shareholders been formerly only led to expect such small dividends as they are now generally in the receipt of, there would not, at the present moment, be above half the number of railways in the country; but the fact is, they were led on by over sanguine speculators, projectors—*et id genus omne*—and other interested parties, besides their own too ardent hopes, to invest their capital in these speculations—few of which in their prospectuses promised them less than 20*l.* per cent. for their money; and, as your correspondent truly observes, "railway shareholders still receive but a fraction of that dividend which should certainly be secured to them under a better and more improved system of working." He appears to consider that the chief cause of the failure of the atmospheric system on the South Devon line was in employing defective engines, though he admits that "their construction was entrusted to the three most eminent manufacturers of the day," and not, as is generally supposed, to the impossibility of keeping the continuous valve air-tight in all weathers, and every variation of temperature, and sufficiently flexible in frost and snow, cold, heat, rain, &c. Here I think that he is in error; for the engines were of first-rate workmanship, and consumed no more than the average quantity of fuel of the generality of land engines, so long as the valve remained unimpaired. He himself states that "experience was still wanting in the construction and management of the vacuum valve; it was left unprotected from the action of heat and rain, and other injurious influences, and by degrees it gave way, and slowly admitted the atmosphere; then, indeed, the engines were worked, of necessity, to the very utmost of their power;" so that it appears, even by his own showing, that the defective valve was the prime cause of the failure, and consequent abandonment of the system; for if the valve had been properly constructed, the engines were fully capable of doing their work with credit to their manufacturers; so that no blame should be thrown upon the engineers who supplied them; but much praise is due to them for having so correctly calculated the precise amount of work they had to perform, of which they could have had no previous experience, and which they executed so long as the valve continued in good working order; but, on the deterioration of the valve, by the friction of the coulter and other causes, the leakage that ensued rendered it necessary to work the engines at an injurious speed, and caused a too great consumption of fuel. The atmospheric system must, under the most favourable circumstances, work to disadvantage, in consequence of the extreme, and almost unattainable, accuracy and tightness required in the construction of the valves of the exhausting pumps, which involves a large outlay for the first expenses; and, as Mr. Isham Baggs remarks, that "it has been incontestibly proved that working under circumstances of extreme exhaustion is accompanied by a most wasteful expenditure of power; for the air-pump expels at each stroke a certain quantity by measure, without any regard to weight or elasticity, &c." These disadvantages do not apply to compressed air; and among the many patents taken out for the application of a different system than the ordinary locomotive, I beg to call your and railway shareholders' attention to Messrs. Fell's system of compressed air, which in my opinion, is the best hitherto proposed, and, if properly carried out on any line of railway, would enable the proprietors to realise at least 10*l.* per cent. dividends, instead of their present low profits. I conclude that Mr. Baggs alludes to this plan, when he says—"In one of these (schemes) there is used a machine, possessing all the working characters of a locomotive—pistons, cylinders, driving-wheels, &c.—it is supplied with necessary power through the medium of a pipe laid between the rails, with which it is capable of communicating. But any plan founded on this principle only gets rid of a portion of the difficulties which encumber the locomotive. The traction principle is not altered; it still depends upon adhesion, and embraces all its concomitant difficulties." I entirely differ from Mr. Baggs in his estimate of its comparative value as a system of propulsion; for if it has some of the disadvantages of the locomotive, it also possesses its great advantages over every other system—viz.: that of being perfectly under the command of the engineer, who can start or stop it in a shorter space of time than the locomotive, reverse the engine, and back the train at a moment's notice into a siding, &c. To perform the latter (so essential) operation with M. Piatti's, would involve a vast complexity of apparatus, if it could even be accomplished by any arrangement; in addition to which, the valve in M. Piatti's would wear out by the unavoidable friction of the coulter, and cause great waste of power and increased expense. The friction in Messrs. Fell's is very trifling, and the first cost as nothing compared to the Devonshire line. Mr. Baggs states, as one of the advantages of M. Piatti's, that "should it be requisite to dispatch a heavy train, to travel with greater velocity, or to surmount a series of steep acclivities, an additional atmosphere is thrown upon the piston with the greatest ease." He does not say how *soon* this could be accomplished, for I imagine it would take a long time to increase the pressure even by a single atmosphere, particularly in a long line of railway; whereas, in Messrs. Fell's, it could be accomplished in a moment, by admitting a larger quantity of air (and working less expansively) to the cylinders of the engine; the weight of the tender is avoided, and a sufficient bite on the rails obtained; the engine cannot run off the line; all accidents and annoyance from the emission of sparks and smoke are avoided, at considerably reduced expense. M. Piatti's plan involves the unavoidable disadvantages of the constant decrease of the driving power, from which the piston is running away, the power cannot be increased in a short time; but in Messrs. Fell's it is the reverse; besides which, a more powerful engine, with larger driving-wheels, may be immediately added to the train. Trusting, Mr. Editor, you will excuse the length of this letter, I think I cannot do better than conclude with the words of Mr. Baggs—"Considering, therefore, these several important points in Messrs. Fell's system, and especially the power and unquestionable simplicity of the contrivance, I truly believe that it is well worth the while of all those whose capital is embarked in railway enterprise, to investigate more clearly the merits of this invention. If the system but once had a fair trial upon a moderate scale, and was worked by one or two Cornish engines of first-rate build and surplus power, and if these engines were supplied with steam of a high pressure, there is not a question but that a demonstration of economy would ensue, which would immediately enhance the value of railway property."—JUSTITIA: *London, Sept.* 6.

[We insert our correspondent's letter, without in any way supporting the opinions held. Our estimate of the capabilities of Fell's system, as it is termed, may be known by referring to our remarks thereon in the *Mining Journal* of June 9th last. All the disadvantages of obtaining power by exhaustion, with many others which no not apply to it, will be encountered by compression tenfold; and in the above system there are so many absurdities and mechanical contrarieties, that it could never work with regularity, certainty, and economy.]

THE ATMOSPHERIC RAILWAY SYSTEM.

SIR,—Having for some years been an admirer of the atmospheric principle of railway traction, it was with no small degree of pleasure that I perused the able review of the recent unsuccessful experiments on the Croydon and South Devon lines, by your talented correspondent, Mr. Isham Baggs; and, after some considerable reflection on the subject, it appears to me that, while some of his conclusions are indisputable, there are others which, if submitted to scientific scrutiny, could be as easily refuted, as I think they have been inconsiderately advanced. There can be no doubt that the failure of those experiments has "caused a spirit of undue alarm and prejudice to operate on the public mind," but it is by no means to be wondered at, when we consider the lamentable results, which have cost the parties interested not less than *half a million of money*. I must demur to his next position, that "there is something radically wrong in the vacuum traction principle;" in fact, he admits that "there are no fatal or irremovable defects," but that the real fault is one of degree only, and that it consists in its available power being confined within such narrow limits. Now, Sir, I venture to say that there are, at least, two inventions on the vacuum principle already partially before the public, which have been favourably spoken of in your Journal, in both of which the available power is unlimited. I allude to the arrangements patented by Messrs. Cunningham and Carter, whose model is now exhibiting, and to that of Mr. Weston, an abstract of whose specification has been published in the *Mining Journal*. The former Mr. Baggs has himself pronounced "economic," and free from the fatal defect which alone led to the abandonment of the system on the Croydon and South Devon lines. The means by which Messrs. Cunningham and Carter would increase the power where necessary, would be either by placing the atmospheric or vacuum engines at shorter intervals, or by making them larger; and Mr. Weston would fix his pistons at shorter intervals on the acclivities, or employ an intermediate valve, or valves, on his travelling traction pipe, or employ one of larger diameter. On either of these systems any reasonable amount of power may be obtained; its aggregate expenditure would be exactly in proportion to the nature of the inclines and weight of the train, and not an atom of vacuum is lost where an incline is sufficient to allow a train to descend by its own momentum. The trains are under the most complete subordination of the attendant, who could retard, stop, or reverse it with the greatest precision, without having recourse to the pernicious practice of locking the wheels, and thus absorbing the power given out by the engine, instead of which its full value would be stored up in the vacuum pipe. I think I have said sufficient to show that the available power is unlimited, and that it may be varied by circumstances to a far greater extent than Piatti's, or any other system of propulsion by compressed air, the adoption of which, in my humble opinion would, in practice, be found to lead to still more ruinous results, and, to use a homely proverb, would be "jumping from the frying-pan into the fire."—AN OLD CONDENSER.

London, Sept. 5.

RAILWAY PROPULSION BY COMPRESSED AIR.

SIR,—There are many points in the communication of Mr. Isham Baggs, in your excellent Journal of Saturday last, on atmospheric propulsion, with which I cordially agree; and I think he has explained the causes of failure of the principle on the South Devon line with that degree of truth and clear-sightedness which must render his remarks duly appreciated by all who are aware of the real circumstances of the case. That the sudden abandonment of the principle, because some of the details were faulty, was injudicious in the extreme, there can be no doubt, particularly at a moment when greater economy was daily taking place, even with the faulty valve; nor can there be less doubt that the majority being directors of the Great Western and Bristol and Exeter Railways gave a most unfortunate preponderance to their decision. However, the decision is made, and must be abided by; my present communication is to make a few observations on railway propulsion by compressed air, whether on Piatti's system, which Mr. Baggs so strongly supports, or on any other. It is my belief that, if the atmospheric system is ever perfected, it must be by exhaustion, and not by compression; nor can I take Mr. Baggs's objection, of only obtaining a certain amount of power, when a heavier train might be required to be dispatched—of any weight; as the proper sized tube once laid down for the maximum weight of the trains, no greater power would ever be required. One great feature in the system is, the power of dispatching frequent trains without a proportionate loss of power.

My great objections to compression are two, one of which Mr. Baggs has touched upon in your last Number—viz.: that the load upon the engine is continually increasing as the compression proceeds, and which objection he certainly has not successfully met; the second is, that as the pressure in the tube is from the inside, and, consequently, the most insecure mechanical form, being the reverse of the arch, the tubes, if cast even of much greater strength, which they must be, and, therefore, be more costly, will still always have a tendency to fracture, particularly when extra power is put on to meet an emergency, which seems to be a feature with its supporters. I have, Sir, watched, with much interest, the progress of the atmospheric system, and, of all the systems, I believe exhaustion to be the correct principle. Of all the longitudinal valve arrangements, Clarke and Varley's I think the best; but for efficiency in working, speed, safety, and economy, and for all the essentials of a railway—in fact, to a far greater extent than can be accomplished by the locomotive engine, leaving out of the question its costliness and destructive properties—Cunningham and Carter's close tube system, now exhibiting in the City-road, stands unrivalled; and from the beautifully graduated arrangement by which the power and vacuum destroyed is in exact proportion to the length of train, and, consequently, the commercial profit obtained, I fully expected that, long ere this, we should have witnessed the plan in full and profitable operation. I sincerely trust no difficulties exist but what can be easily surmounted by union and perseverance, and that the delay has only been occasioned from obstacles arising from the state of the money market. If once carried out, I feel confident the proprietors would reap an abundant harvest, and the railway world, and the public in general, acknowledge that a boon had been conferred on them.

St. John's-square, Sept. 12. GEORGE WILLIAMS.

EXPERIMENTS IN STEAM-SHIP BUILDING.—A very interesting trial of speed took place on the Thames on the 6th inst., between the *Manchester* and *Sheffield* steam-vessels, having bows and stern alike, and fitted up with excellent deck accommodation, being intended to run between Hull and New Holland, to convey the passengers of the Manchester, Sheffield, and Lincolnshire Railway across the Humber. Messrs. Robinson and Russell built the *Manchester*, and also fitted her with engines. The length of keel of the *Manchester* is 167 ft., and her breadth of beam 22 ft., and she is fitted with oscillating engines of 450 nominal horse power, the cylinders being 4 feet diameter, and the stroke 4 feet 6 inches. The *Sheffield* was built by Mr. Smith, of Gainsborough, and her length of keel is 150 feet, with a breadth of beam of 22 feet. Her engines were constructed by Messrs. George and Sir J hn Rennie, under the superintendence of Mr. Humphries, now chief engineer at Woolwich Dockyard, and they are on the oscillating principle, of 156 horse-power, with cylinders 4 feet diameter, and 4 feet stroke. Both vessels arrived at Blackwall about 12 o'clock, when Mr. A. Robinson went on board the *Sheffield*, and requested that the race should commence from Erith instead of Blackwall, as was first intended. This was agreed to, and the *Manchester* started, followed at about three boats' length by the *Sheffield*. When opposite Erith, the *Sheffield* had to stop twice, in consequence of craft in the river, and the steering becoming jammed in the sheave. When the *Sheffield* arrived at Erith, the *Manchester* was about a mile ahead, and instead of stopping there for the former, as Mr. Robinson proposed, she went on straight ahead, and from Erith to the Nore light gained nearly another mile. When the *Manchester* rounded the light, Mr. Fowler, engineer to the railway company, and umpire of the race, ordered the *Sheffield* to turn, which gave her a start of nearly two miles, and that distance was increased all the way to Blackwall, and she was three miles and a half ahead of the *Manchester* when she arrived at the Brunswick pier. Taking the race as commencing at Erith, the *Sheffield* beat the *Manchester* by a little more than half a mile—a very close race, considering the distance run by the vessels. The engines of both worked well—those on the *Sheffield* making 35 revolutions per minute, with paddle wheels 18 feet in diameter, and floats 11 feet by 1½ feet. She had no hot bearings nor any accident whatever, and kept blowing off steam both going and returning. The average speed attained was nearly 16 miles an hour. The *Manchester* left the river for the Humber on Friday last, and the boats are highly creditable to their constructors.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.—This company, it is said, have disposed of their steam-boats, which originally cost 30,000*l.*, for 15,000*l.*, to the French Government, who intend to run them between Marseilles and Geneva.

TO BE DISPOSED OF, the MANUFACTURING PREMISES, BUSINESS, and CONNECTION (which is of a first-rate character), of a well established MACHINERY GREASE MAKER. 47

Also, several PATENT RIGHTS, FREEHOLD ESTATES, LEASES of FOUNDRIES and ENGINEERING WORKS, FREESTONE QUARRY, and COAL and IRONSTONE MINES; SHARES in a well-known SLATE QUARRY, the PART, or the WHOLE, of a well-established GAS WORK, & STEAM-ENGINES and MACHINERY of all descriptions.

For particulars apply to James Boydell, land, mine, and machinery valuer, and agent, No. 54, Threadneedle-street, London.

IRON ORE—FURNESS, LANCASHIRE.—TO MINERS AND OTHERS.—LEASES of IRON ORE, in this district, will be GRANTED to PARTIES with CAPITAL, wishing to undertake the necessary trials. 45

For further particulars apply to J. Cranke, Esq., Ulverston.—The Furness Railway connects the mineral district with Barrow Harbour, where there is excellent accommodation for shipping the ore with certainty and dispatch, and at a moderate cost.

TREBOROUGH SLATE QUARRY, near the ports of WATCHET and MINEHEAD, on the Bristol Channel, TO BE LET, BY TENDER, for a term, from Michaelmas, 1849.—This Quarry is approached by good roads, and supplies a very extensive district, comprising numerous large and important towns. The Slate is celebrated for its hardness and durability, and is equal in quality to any Cornish or Welsh Slate. It is inexhaustible, and has been profitably worked for upwards of a century. A tunnel is opened, and a tram-road laid down, which serve to drain the quarry effectually, and to remove the deads and land the slate. There are Sawing, Planing, and Polishing Machines, for converting the slate; the whole worked by a new and powerful water-wheel, amply supplied with water. 46

Mr. Babbage, at Nettlecombe-court, near Taunton, will show the quarry, and give every information relative to it.

Tenders, in writing, to be delivered on or before the 27th day of September, 1849, to Messrs. Rowcliffe and Son, solicitors, Stogumber, near Taunton.

BELFAST.—THE IMPROVED FLAX-DRESSING MACHINERY.—PERSONS requiring MACHINERY for SCUTCHING or DRESSING FLAX from the STRAW, can be supplied on application to the manufacturers, 47

MacADAM, BROTHERS, & Co.,
ENGINEERS, SOHO FOUNDRY, BELFAST,
MAKERS of the IMPROVED MACHINERY—recommended by the Royal Flax Society of Ireland.
Sept., 1849.

TO ENGINEERS AND BOILER MAKERS.—The BIRMINGHAM PATENT IRON TUBE COMPANY MANUFACTURE PATENT LAP-WELDED IRON TUBES (under Mr. R. Prosser's Patent) for Marine, Locomotive, and all Tubular Boilers. Also, TUBES for Gas, Steam, and other purposes. All sorts of IRON GAS FITTINGS. 48

WORKS—Smethwick, near Birmingham.
LONDON WAREHOUSE—No. 6, Upper Thames-street.

MELLING'S IMPROVED DOUBLE SASH WINDOW. IMPORTANT TO LUNATIC ASYLUMS, PRISONS, HOSPITALS, &c.

These PATENTED SASHES are raised and lowered without sash cords and weights, and are so arranged that any width of opening can be secured for free ventilation, without the possibility of giving width sufficient for escape. They are exceedingly simple, not liable to get out of order, and most admirably adapted for public establishments. 49

For further particulars apply to Mr. Thos. Melling, Rainhill Iron-Works, near Liverpool.

TOUGHENED CAST-IRON—STIRLING'S PATENT.

No. 1—For SMALL and MEDIUM CASTINGS.
No. 3—For HEAVY CASTINGS. 50
No. 3 *(Extra)*—For ROLLS, HEAVY SHAFTS, and VERY HEAVY CASTINGS.

The above is by far the strongest Cast-Iron made, and is now being extensively used where strong castings are required.

Further particulars may be obtained on application to
MESSRS. GARDEN & MACANDREW,
27, Queen-street, Cheapside, from whom also the IRON can be PROCURED.

CWMBRAIN PATENT IRON REFINERY.—The PROPRIETORS of IRON FORGES and MILLS are respectfully INVITED to MAKE TRIAL of Mr. BLEWITT'S REFINED IRON, or METAL, PREPARED by a NEW PATENT PROCESS,

whereby the IRON is completely FREED from the IMPURITIES CONTRACTED in the BLAST-FURNACE, and, by judicious mixtures, rendered applicable to every kind of manufacture. Heretofore, the metal usually sold in the market has been produced from the worst pigs, scraps, and refuse of some particular blast-furnace, or set of furnaces, without any mixture, or any regard to quality, or the purpose for which it might be required. The PATENT METAL is PREPARED ON SYSTEM, and TO ORDER, for any of the following purposes:— 51

1. For BOILER and TANK-PLATES.
2. For TIN-PLATES, commonly called COKE-PLATES.
3. For STRONG CABLE BOLTS, RIVET, and ANGLE IRON.
4. This COMPOUND PUDDLED, beat under the hammer into a bloom, reheated, and rolled into a 6 or 6½-inch bar, makes TOPS and BOTTOMS for FLANCH and OTHER RAILS, of very superior quality, and attended with less waste than any other kind of iron used for that purpose. It is also well adapted for nail-rods, horse-shoes, and for other ordinary uses of the blacksmith.

The PATENT METAL is marked with a squirrel, and the initials "R. J. B.," and is to be had only at the "Cwmbrain Iron-Works," near Newport, Monmouthshire.

BICKFORD'S PATENT SAFETY FUSE.—The Patentees of the ORIGINAL, and only real, SAFETY FUSE, beg to inform Merchants, Mine Agents, Railway Contractors, and all persons concerned in Blasting Operations, that, for the purpose of protecting the public in the use of a genuine article, the PATENT SAFETY FUSE *has now a thread wrought into its centre,* which being patent right, infallibly *distinguishes it from all imitations,* and ensures the continuity of the gunpowder. The Safety Fuse is now protected by a Second Patent, and manufactured by greatly improved machinery. BICKFORD, SMITH, & DAVEY, Camborne, Cornwall. 52

STRUVE'S PATENT MINE VENTILATOR.
COST—£150.
TO COLLIERY PROPRIETORS.

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus. 53

COST of an APPARATUS to produce a ventilation of 20,000 cubic feet per minute, ONE HUNDRED and FIFTY POUNDS, exclusive of patent right. This amount of ventilation would be sufficient for a mine working 150 tons per day, provided it was not very fiery; in which case it would be desirable to provide for 30,000 cubic feet of air per minute. The capabilities of the Ventilator may be doubled at any future time, at a comparatively small cost.

The Ventilator has been at work for upwards of six months at the Eaglesbush Colliery, near Neath, working under a rarefaction of 2½ to 3 inches of water, which demonstrates the impracticability of furnace ventilation, when the shafts are shallow and the airways small.—It is practical to rarify a mine by this ventilator to the extent of 2 feet of water, or 2 inches of mercury.

LICENSES will be GRANTED on application to
Mr. WILLIAM PRICE STRUVE, Swansea,
CIVIL ENGINEER AND MINERAL SURVEYOR.

WIRE ROPE.—The Undersigned beg to inform the public, that they have become SOLE LICENSEES of Mr. ANDREW SMITH, for the MANUFACTURE and SALE of his PATENT WIRE ROPE; and having fitted their premises with his very superior improved machinery, have only to assure those who may favour them with their orders, that the same care and attention shall always be bestowed which, they have reason to believe, has secured them such general support. 54

LIGHTNING CONDUCTORS, SIGNAL CORD, and SASH LINE, always in stock.
WILKINS & WEATHERLY.
Patent Wire Rope Works, No. 39, High-street, Wapping, London.

WARRANTED SAFETY FUSE.—W. BRUNTON & CO. beg to inform Mine Agents, Contractors, and Merchants, that having completed their Machinery for the MANUFACTURE of the ABOVE ARTICLE, they are enabled to offer FUSE of a very superior quality, and at considerably reduced prices.

W. B. & Co. can SUPPLY FUSE in ANY LENGTHS that may be required. 55
Penhellick Fuse Factory, Pool, Truro, Cornwall.

TESTIMONIALS.

We, the undersigned, hereby bear our testimony to the excellence of the Safety Fuse, manufactured by Messrs. Brunton and Co. We have had it in use in our mines; and, after sufficient trial, find it to be fully equal to any Fuse we have ever used:—

Carn Brea Mine.
R. H. Pike, Purser.
John Leuten, James Miners, John Vivian, John James, } Agents.

North Pool Agents.
James Evans.
John Nancarrow.
Frederic Evans.

South Roskear Agents.
John Dunkin.
William Thomas.

Cook's Kitchen Agents.
Joseph Vivian.
Richard Bennetts.

Cook's Kitchen Agents.
John Ivey.
William Hitchens.

North Roskear Agents.
Joseph Vivian.
William Michell.
William Thomas.

Tincroft Agents.
Peter Floyd.
Thomas Stainsby.
Thomas Lean.
Henry Hocken.
Richard Martin.

William Nancarrow.
Alex. Eudey, Joseph Eudey, } *Wheal Agar Agents.*

DEVON.—HENNOCK IRON, STEEL, AND TIN MINING COMPANY.
ON THE COST-BOOK PRINCIPLE. 56

BANKERS—Devon and Cornwall Bank, Exeter and Newton Abbott.
SOLICITORS—Messrs. Kennaway and Buckingham, Exeter.
Capital £9450, in 4500 shares, at £2 2s. each, without further calls or liability.
Deposit £1 1s. per share.

The promoters of this company propose to raise the above capital to work efficiently these very valuable mines of micaceous iron and tin ore, situate in the parish of Hennock, 12 miles west of Exeter, and 2 from Bovey Tracey, on the confines of Dartmoor.

These mines are not a new discovery, but possess the advantage of having had their merits tested to an extent that fully establishes their great capabilities, and warrants the expectation of a large trade at a highly remunerating profit.

Prospectuses and particulars supplied on application (if by letter, post-paid) to Mr. Tripp, Bedford Chambers, and of Mr. T. Sanford, Exeter; Mr. H. Luscombe, Plymouth; Mr. B. S. Stock, Bristol; Mr. C. P. Cameron, Liverpool; Mr. J. Lane, 80, Old Broad-street, Mr. Herron, 33, Clements-lane, and at the office of the *Mining Journal*, No. 26, Fleet-street, London.

VALLEY OF LOETCHEN MINING AND SMELTING COMPANY'S OFFICES, No. 37, Southampton-street, Strand, London.—For the INFORMATION of all PARTIES INTERESTED, or likely to become interested, in the above-named MINES, and to REPUDIATE any ENGAGEMENTS made by the parties mentioned in the two following bulletins, with Smelters, Managers, Agents, Clerks, or any other persons whatsoever, I, the UNDERSIGNED, managing director thereof, think it right to give the following TRANSLATIONS of the OFFICIAL BULLETINS, issued from the office of the Civil Judge at Sion, Canton du Valais, Switzerland, the 1st of September inst. G. W. BLANCH.

September 12, 1849.

BY THE JUDGE OF THE TOWN OF SION. 57

To you, Messrs. John Hooker and Jacques Boyet, residing at Sion; and to you, Messrs. John James, John George Rippon, Lewis Graves, and George John William Buschhair and Company, the three last residing at Sion, and dwelling at the hotel of the White Cross, chosen by them as their place of residence, and as having acquired rights from Messrs. Pierre and Vinasque de Baglioni, in the company of the Mines of Loetchen,

The advocate, Henry Ducral, residing at Sion, acting as the agent of Mr. Gustavus William Blanch, surgeon in London, has submitted to us that you are not ignorant that he is your fellow-shareholder in the workings of the mines of Loetchen, according to the agreement of the 10th May and 15th July, 1848, and that, in that capacity, he has paid over considerable sums into the funds of the company; that he had been charged to form a company in shares, for the workings of the mines in question, on the part of his associates—particularly by a letter of the 10th May, 1848, and by a document of the 29th August of the same year. In conformity with these powers, a company, *en commandite*, with a capital of £60,000, has been formed in London, agreeably to the agreement of the 15th February, 1849. The office of this company was fixed at No. 37, Southampton-street, Strand. The requirements of the English laws have been complied with, and the formation of such company was published (conformably to these laws) in the *Times* and *Morning Chronicle*. Mr. Blanch was the director of the company. All these circumstances were legally notified by documents of the 17th February, 1849, and 1st March, in the same year, and were brought to the knowledge of Messrs. Rippon, Lewis, Graves, Buschhair and Company, by the act of sale of the 29th May, 1849.

That, in contempt of what is hereinbefore set forth, you have taken upon yourselves the business of the said company, without the least regard to Mr. Blanch, your fellow-shareholder, and without consulting him, as if there did not exist a company in shares *en commandite*, and as if Mr. Blanch was not your fellow-shareholder—a position which he could only lose by a definite judgment, never yet pronounced. From what is said, you are hereby strictly *forbidden* to intermeddle in any way whatever in the administration of the said mines, of which Mr. Blanch is *the sole director*. You are forbidden to dispose of the ores raised, or other properties of the company, Mr. Blanch reserving to himself (if he shall so choose) the power to question the validity of all that you have done in regard to the affairs of the mine up to this date.

If, contrary to this notice, you shall venture to do any thing herein forbidden, the advocate of Mr. Blanch will be under the necessity of having recourse to *sequestration*, to prevent a misappropriation of the mining properties.

You are hereby summoned to appear before us at our office at Sion, the 17th of this month, at 2 o'clock in the afternoon, that you may acknowledge the new company (*en commandite*) in shares, which has been formed, in default of which the Court will proceed according to law. Given at Sion, the 1st September, 1849.

BY THE JUDGE OF THE TOWN OF SION.

To you, Messrs. John Hooker and Jacques Boyet, residing at Sion.

The advocate, Ducral, residing at Sion, acting as agent of Mr. Gustavus Wm. Blanch, notifies to the said Mr. Boyet, that he has committed an act of contumacy, for not having appeared on the 29th August last. You are again summoned, both of you, to appear before us at our office at Sion, the 17th of this month, at three o'clock in the afternoon, further to go into the cause in dispute with the parties. You are hereby informed, that Messrs. Baglioni, father and son, are likewise summoned.

Given at Sion, the 1st September, 1849.

GUADALCANAL SILVER MINING ASSOCIATION.—At a Special General Meeting of the shareholders of this association, held at the offices, on Wednesday, the 12th of September inst.,

GEORGE K. HUXLEY, Esq., in the chair,

the following resolutions were passed unanimously:— 58

Moved by Mr. La'Mert; seconded by M. T. Uzielli,—
That the report of the directors be now received and adopted.

Moved by Mr. Clementson; seconded by Mr. Prianlx,—
That the directors be, and are hereby, authorised to issue 2000 further shares, of £5 each, for the general purposes of the company; that in respect of each of these shares the sum of £3 shall be credited on payment of a first instalment of 10s. per share, on the 28th Sept. inst., and that the remaining £2 shall be paid by instalments, at the following dates—viz., on or before 1st Nov., 10s.; on or before 1st January, 1850, 10s.; on or before 1st March, 10s.; and on or before 1st May, 10s. per share.

Moved by Mr. Docker; seconded by Mr. C. A. Kelly,—
That every shareholder shall be entitled to participate in such fresh issue, to the extent of one share for every two shares held by him, provided he declare his intention to that effect, and pay the first instalment of 10s. per share, on or before the day specified—viz., 28th Sept., at the offices of the association.

Moved by Mr. J. La'Mert; seconded by Mr. F. Bramwell,—
That in the event of any shareholder not taking and paying upon his proportion of the new stock within the time specified, he shall be considered to have declined the same, and that the directors be authorised to appropriate the deposits to be raised on the new shares whereon 1250 thereof have been paid upon, and that they shall be at liberty to dispose afterwards of any new shares remaining beyond that number for the benefit of the association.

Mr. La'Mert expressed his entire confidence in the board of directors, and proposed a vote of thanks to them, which was carried unanimously.

BRIMPTS TIN MINING COMPANY, DARTMOOR, DEVON.
ON THE COST-BOOK PRINCIPLE,

Which exempts shareholders from any liability beyond the amount of their shares, and enables them to withdraw at any time by giving notice to the purser to that effect.

In 256 shares, at £2 2s. each.—No person to be allotted less than 4-256ths.
BANKERS—Devon and Cornwall Banking Company, Exeter and Totnes.
SOLICITOR—Mr. R. Robins, Tavistock.
PURSER—Mr. George Stranger, Holne, near Ashburton. 59
SECRETARY PRO TEM.—Mr. R. Tripp, Exeter.
OFFICES—BEDFORD CHAMBERS, BAMPFYLDE-STREET.

This MINE is situated at the bottom of DARTMEET HILL, in the FOREST of DARTMOOR, in the parish of LIDFORD, DEVON; distant 16 miles west of Exeter, 12 from Tavistock, and 12 from Totnes.

The SETT is about a mile long from east to west, and half a mile wide. There are several lodes passing through it in an east and west direction, which have been worked on by the late owner of the estate, from whence considerable returns were made; and no doubt exists that this mine will again take its stand as one of the most productive and richest mines in the county.

The dues payable are only 1-18th, and the sett is held for 21 years, commencing from the 1st day of November, 1848.

The subjoined report of Mr. Jehu Hitchins (one of the most eminent practical miners of the day), and also the declaration of Mr. Tuckett, made before a Master Extraordinary in Chancery—that the mine was worked about 50 years since, and that it was abandoned by him solely for the reason therein stated—furnishes indisputable evidence of its great value.

As the meeting of the shareholders is to take place at the mine on the 27th Sept. inst., for the purpose of carrying on the operations of the mine, applications for shares must be made before that day to Mr. R. Tripp, Mr. R. Robins, or Mr. George Stranger.

THE OLD BRIMPTS MINE SETT.
REPORT.

SIR,—Having carefully examined this sett, and noted its various points, as far as they admitted of inspection, with a view to submit my opinion thereon as to the probability of its future productiveness and capabilities, permit me to offer the following observations:—

In the first place—independent of living evidence—the ancient workings show that a vast amount of labour must have been bestowed in searching for ore, and from the sides of the excavations, stones of tin of rich quality have been found—clearly showing that was the metal sought for, and that a great quantity must have been raised; in fact, the renown of this mine has been the theme sounding in my ears ever since my first recollection—my late father having, both from report as well as personal inspection, often expressed to me his desire to obtain the grant; now do I myself the least dispute the correctness of his opinion, for I believe the lode, or rather lodes, are large, and must have been productive.

The sett is an extensive and sufficient one for the employment of capital, I think beneficially, as well as the exercise of mining skill, being from north to south from Bellevor Torr to Dartmeet, and from the East to West Dart Rivers, which furnish sufficient water-power for all the requisite purposes—such as pumping the water and drawing the stuff and work out of the mine, as well as every purpose of dressing.

There is also timber of every description growing close on the mine, and the stratum of ground through which the lodes traverse is of a soft and congenial character, so that this adventure can be carried out with all due economy.

I am informed the mine is 10 fathoms under the adit; I should, therefore, advise a water-wheel to be at once provided, with all the requisite appliances, either new or good second-hand, as the case turns out, and to clear and drive the adit level. Also clear up the shafts and workings, so as to be satisfied as to the whereabouts to begin operations for a permanent working, the which, if properly carried out, I am of opinion will lead to satisfactory results.

In conclusion, allow me to say, this sett, from the foregoing imperfect sketch of its prospects, is such as I should not hesitate to recommend to any spirited set of adventurers, to whom I should wish success, and I remain, Sir, your obedient servant,
Tavistock, July, 1849. JEHU HITCHINS.

DECLARATION OF MR. RICHARD TUCKETT.

I, Richard Tuckett, of Dunnabridge, in the parish of Lidford, in the county of Devon, yeoman, do solemnly and sincerely declare that I am now seventy-nine years of age; that about fifty years since I was in the service of Mr. Joseph Sanders, of Brimpts, in the parish of Lidford aforesaid, and that whilst in his employ I was in the habit of drawing with a slide-but tinstuff from the shaft near to the stable, and also from a level in a field called the Potatoe Field, part of Brimpts estate aforesaid, down to the Stamps; and I continued drawing tinstuff from the places before-mentioned, at different periods, for two or three years; and I further solemnly and sincerely declare, that I remember the mine at Brimpts being worked by the said Joseph Sanders alone for seven or eight years; and that the tinstuff, when made marketable, was taken to Tavistock by the said Joseph Sanders; and I further solemnly and sincerely declare, that I remember the said Joseph Sanders discontinued working the said mine called Brimpts, because he considered the miners were imposing upon him: and lastly, I solemnly and sincerely declare, I recollect the miners offered the said Joseph Sanders to work the said mine at a low tribute, but he, the said Joseph Sanders, refused their application.

Dated the 4th April, 1849.

TO THE OWNERS OF COLLIERIES, MINES, PLANTATIONS, SAW-MILLS, &c. 60

IMPROVED CIRCULAR SAWS, MILL-SAWS, FILES,

Machine Irons, and Cutting Knives, Steel in Blister, Bar, Cast, Shear, and Drift Steel, Springs for Railways and Common Roads, Iron Washers, Bolts, Hammers, &c., on the most PERFECT and ECONOMICAL PRINCIPLES, MANUFACTURED with DISPATCH, by

BLAKE AND PARKIN,
THE MEADOW STEEL-WORKS, SHEFFIELD.

STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY 61

BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA—On the 20th and 29th of every month. CONSTANTINOPLE—On the 29th of the month. ALEXANDRIA—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Leadenhall-street, London; and 37, High-street, Southampton.

Just published,

DR. MUSPRATT'S PLATTNER ON THE BLOWPIPE. SECOND EDITION.

The USE of the BLOWPIPE, in the EXAMINATION of MINERALS, ORES, and other METALLIC COMBINATIONS.

By Professor PLATTNER, Assay Master of the Royal Saxon Smelting-Works. Edited, with numerous Emendations, by Dr. SHERIDAN MUSPRATT, Professor of the Liverpool College of Chemistry, &c.—Illustrated by numerous engravings.

In One Volume, Octavo, price 10s. 6d. 62

Baron Liebig's Preface.

"Dr. Sheridan Muspratt's translation of Plattner's excellent treatise on the use and application of the blowpipe, has been executed with fidelity and ability, and I consider its publication in England of essential service. The translated edition is further enhanced by Dr. Muspratt's annotations."

Professor Will, of Giessen.

"Dr. Muspratt has earned a lasting reputation, by introducing successfully Plattner's renowned work on the blowpipe to the English public."

Dr. Hofmann, of London.

"Dr. Muspratt, in a comparatively short time, besides bringing out a translation of Plattner's renowned work on the blowpipe, published two memoirs, establishing at once his intimate acquaintance with mineral and organic chemistry."

Plattner's Work on the Blowpipe is now used in all the Laboratories of Europe.

London: Taylor, Walton, and Maberly, No. 28, Upper Gower-street, and No. 27, Ivy-lane, Paternoster-row.

GEOLOGY.—Persons wishing to become ACQUAINTED with this interesting BRANCH OF SCIENCE, will find their STUDIES greatly FACILITATED by means of ELEMENTARY COLLECTIONS, which can be had at TWO, FIVE, TEN, TWENTY, or FIFTY GUINEAS each, arranged and sold by Mr. TENNANT, 149, STRAND, LONDON. 63

A COLLECTION for FIVE GUINEAS, which will illustrate the recent works on Geology, contains 200 specimens, in a mahogany cabinet, with five trays—viz.:

MINERALS which are the components of rocks, or occasionally imbedded in them—Quartz, agate, calcedony, jasper, garnet, zeolite, hornblende, augite, asbestus, felspar, mica, talc, tourmaline, calcareous spar, fluor, selenite, baryta, strontia, salt, sulphur, plumbago, bitumen, &c.

METALLIC ORES.—Iron, manganese, lead, tin, zinc, copper, antimony, silver, gold, platina, &c.

ROCKS.—Granite, gneiss, mica-slate, clay-slate, porphyry, serpentine, sandstones, limestones, basalt, lavas, &c.

FOSSILS from the Llandeilo, Wenlock, Ludlow, Devonian, carboniferous, lias, oolite, wealden, chalk, plastic clay, London clay, and crag formations, &c.

Mr. TENNANT gives PRIVATE INSTRUCTIONS in MINERALOGY, with a view to facilitate the study of Geology, and of the application of Mineral substances in the Arts, illustrated by an extensive collection of specimens, models, &c.

TO THE GUARDIANS OF UNIONS, and OTHERS having the CHARGE of the POOR, and to the PUBLIC IN GENERAL.—The BOARD OF HEALTH having, in their first circular, recommended the use of BRANDY in the medical treatment of persons labouring under the premonitory symptoms of *Cholera*, we think it right to publish the following important TESTIMONIALS in favour of our PATENT BRANDY, which has long been employed in preference to foreign for medicinal purposes, at St. George's, St. Thomas's, Guy's, and the Westminster Hospitals, and also in the Manchester, Bristol, and Brighton Infirmaries. 64

EXTRACTS FROM TESTIMONIALS.

"Your Patent Brandy contains as pure a spirit as the best varieties of foreign brandy. (Signed) EDWARD TURNER, Prof. of Chemistry, London University."

"For purity of spirit your PATENT BRANDY cannot be surpassed; it is also quite free from those acids which always contaminate the foreign spirit. (Signed) JOSEPH HUME, Toxicological Chemist to the Board of Excise."

"Your Patent Brandy is free from uncombined acids, which exist, more or less, in most of the brandies imported from France. (Signed) JOHN THOMAS COOPER, Professor, at Guy's Hospital."

"Grenadier Guards Hospital.

"The two samples of your Patent Brandy I had an opportunity of laying before the Board of Officers, which sat at the Regimental Hospital last Saturday. Every member of the board approved of the brandy, and have ordered that it shall be used for the sick. Messrs. Betts & Co." (Signed) J. HARRISON, Surgeon-Major, Grenadier Guards.

We beg to announce to all persons desirous of purchasing the GENUINE PATENT BRANDY, that the same can be procured in every town in the kingdom, at 3s. per bottle, each bottle being secured by our Metallic Capsule, or direct from the distillery, in quantities not less than Two Gallons, at 16s. per gallon.

BETTS & CO., PATENT BRANDY DISTILLERS,
7, *SMITHFIELD BARS, LONDON.*

The Patent Brandy, in combination with Ginger (GINGER BRANDY), may be had on the same terms, if preferred.

BY ROYAL
HER MAJESTY'S LETTERS PATENT.

JOHN BROWN'S CONICAL RAILWAY BUFFER, BEARING AND DRAW SPRINGS.

Guaranteed 12 months.—Each spring to carry from 4 to 5 tons. 65

The Patentee invites the attention of Railway Authorities, Carriage Builders, &c., to his NEWLY-INVENTED CONICAL SPRING, for BUFFING and DRAWING; its mechanical action will be found to be both easy and powerful, and from the principle of each coil falling within the others, until they form a flat surface, the spring can sustain no injury from any blow or pressure when driven home; the amount of play in these is much greater, in proportion to the price, than in any other springs. The use also of wrought-iron cylinder plungers (which the patentee has been the first to introduce), will at once be seen to offer a security against breakage, hitherto unknown in any box buffer spring. It has been the determination of the patentee to introduce these springs at such prices as will admit of their application to all description of railway plant.

It will be seen from the subjoined list of prices, that, taking into consideration the proportion of play and the durability of the material used—"steel"—these are at the same time the cheapest and most effective Buffer Springs now in the market; they are already in use upon 21 different lines of railway in the United Kingdom.

PRICES PER SET OF FOUR BUFFERS, COMPLETE,
With Wrought-Iron Buffer-Rods, or Cylinder Plungers.

For Mineral Waggons—9-inch diameter at base, 3-inch play				£6 0 0
For Goods Waggons, Vans, &c.—10-inch ditto, 3½-inch ditto				7 10 0
For Cattle Waggons, Engines, Tenders, &c.—11-inch ditto, 4½-inch ditto				9 10 0
For Passenger Carriages—10-inch ditto, 7-inch ditto				11 10 0
If with cast-iron plungers,	9	10	11-inch,	
	5s.	10s.	15s. per set less than the above.	
Draw springs, with	2½	3½-inch play,		
	32s.	40s. per pair.		

Delivered in Sheffield, Birmingham, or Glasgow.

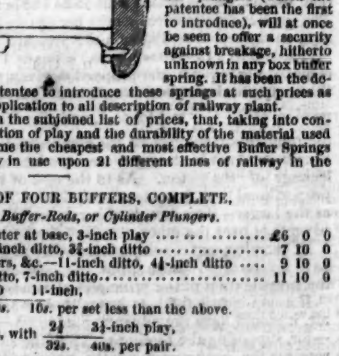
The BUFFERS may BE SEEN at the Patentee's, ATLAS STEEL and SPRING WORKS, SHEFFIELD, and upon application to his agents, as under, where further information may be obtained:—

LONDON—Mr. J. Freeman, 19, Artillery-place, Finsbury.
GLASGOW—Mr. A. Tolmie, 166, Buchannan-street.
BIRMINGHAM—W. G. Tilfourd, 84½, Great Charles-street.
NEWPORT (Monmouthshire)—Mr. R. W. Toogood.

IMPROVED LIFTING JACKS,

MANUFACTURED BY
W. AND J. GALLOWAY,
PATENT RIVET WORKS,
MANCHESTER.

IMPROVED RATCHET JACK. HALEY'S PATENT LIFTING JACK. 66



*** The attention of parties who employ
Lifting Jacks,
is respectfully requested to the superiority of those annexed, over those hitherto in use.

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